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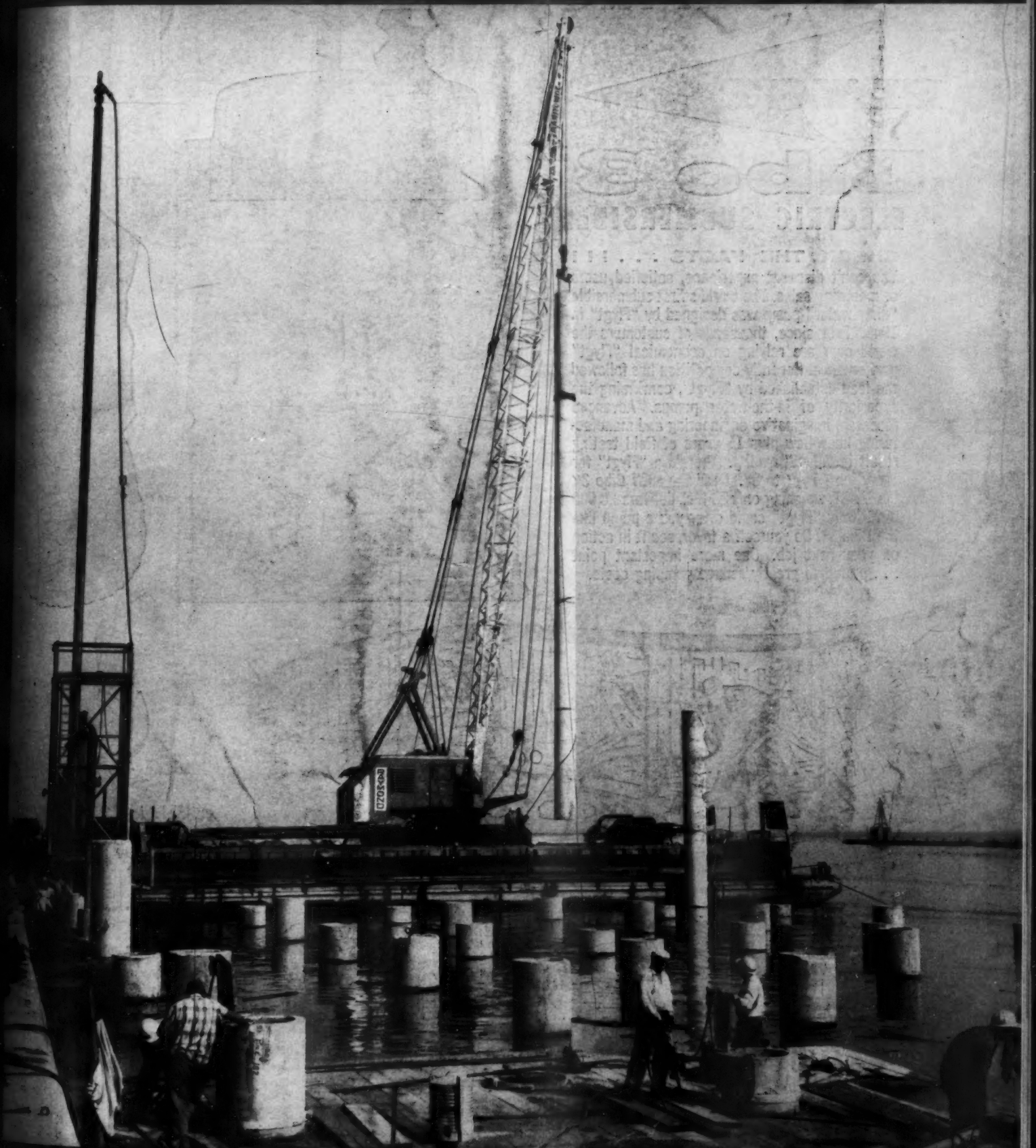
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16 Dozers and loader dig highway cut

CONTRACTORS and ENGINEERS

MAGAZINE OF MODERN CONSTRUCTION

MAY 1961



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CONTRACTORS and ENGINEERS

MAGAZINE OF MODERN CONSTRUCTION

MAY 1961

470 Park Ave. South, New York 16, N.Y.

A Bittenheim Publication

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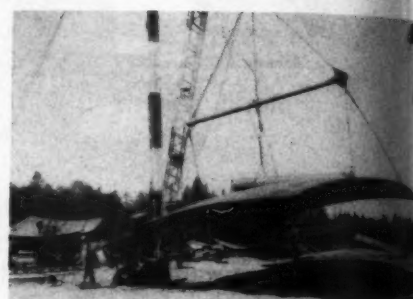
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Automatic hot-mix production

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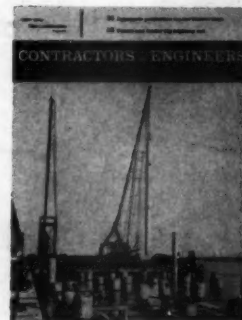
Assembling steel sphere

Page 46



Big drills for tough grading job

Page 74



COVER:

A Raymond-designed drill, far left, sinks holes for 80-foot-long prestressed piles being set by a Manitowoc 3900, while crews with Thor hammers cut piles off to grade, for the new addition to the Navy Pier in Chicago. The pier design, also calling for prestressed plank for the deck, held costs below those for an addition completed in 1959.

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Associated Publications

The American City	OVERVIEW
Municipal Index	MART
	AMERICAN SCHOOL AND UNIVERSITY

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CONTRACTORS AND ENGINEERS

Money at 4 per cent

Small business is being encouraged to expand with new cut-rate credit available from the federal government.

In an effort to generate new jobs at the grass roots economic level, the Small Business Administration is offering loans at 4 per cent under certain circumstances. This is less than the "prime" risk rate of 4½ per cent that big, credit-worthy firms have to pay to borrow from commercial banks.

The new 4 per cent loans are available to small manufacturers, wholesalers, retailers, service establishments, and other small businesses, including construction contractors, located in areas of "substantial labor surplus." These are areas with 6 per cent or more of their available labor force unemployed. They now comprise about two-thirds of the nation's 150 major industrial areas and 184 smaller communities.

The low SBA loan rate will apply

in a given locale only as long as the community remains on the high-unemployment list. The federal agency's normal 5½ per cent rate will apply thereafter.

Who's a "small" contractor

To qualify as a "small" firm, a construction contractor must have averaged under \$5,000,000 in business volume over the last three fiscal years. But SBA emphasizes that this definition is of a general nature

and has been modified in the case of certain types of businesses. The small contractor should consult the nearest SBA field office for specific standards.

An SBA loan is made only when funds are not commercially available to a small business on "reasonable" terms. It may be a direct loan entirely out of federal funds, or it may be partly bank-financed.

A small business owner turned down by his local bank should learn whether the bank can or will grant the requested loan with SBA participation. On this basis the SBA may purchase from the bank as much as 90 per cent of the original principal balance of the loan—or up to \$350,000 on a dollar basis.

Larger loans are available for certain purposes to pools of small firms. The maximum "pool" loan is \$250,000 times the number of concerns joining for purposes of the loan.

In all "regular participation" arrangements, part of the money carries the agency's rate and part the bank's regular current rate.

The maximum maturity period for these loans is generally 10 years, though loans for working capital are usually limited to 6 years. Loans for construction purposes may have a maturity of 10 years plus the estimated time required to complete construction. Pools of firms borrowing for construction of facilities may have as much as 20 years to repay.

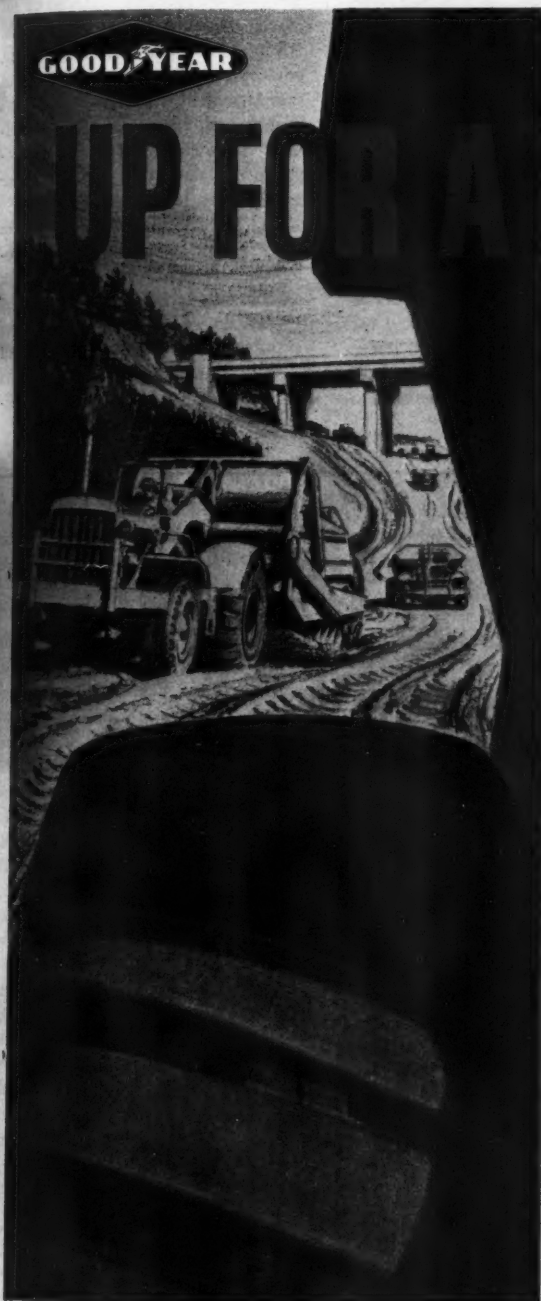
Straight government loan

If the bank will not grant the loan even with SBA participation, the small business may apply for a direct government loan not involving the bank. Here again, the maximum direct loan to any one small business is \$350,000.

A firm applying for a loan must be prepared to show that its past earnings record and its prospects promise repayment of the loan out of income from the business. The proposed loan must be clearly of such sound value or so secured that repayment will reasonably be assured.

A third type of SBA loan is offered to small businesses that cannot pledge as much tangible collateral as is required in the regular loans. A small business meeting earnings, management, and credit criteria may apply for a "limited loan." This type of loan is made only if a bank will participate and service it. The SBA will share in the loan to the extent of \$15,000 or 75 per cent of the total amount, whichever is less. The maximum maturity of a limited loan is 5 years, with a monthly repayment schedule.

For further information on SBA loans, write on your company letterhead to Research Director, CONTRACTORS & ENGINEERS, 470 Park Ave. South, New York 16, N.Y.



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Example: SUPER HARD ROCK LUG

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Editorial

National Highway Week

The week of May 21-27 has been designated National Highway Week throughout the United States. During that week, anyone who plays any part in the highway construction industry should tell the proper highway story to as many of the general public as he can. The industry has always been telling the story, but during this week particularly it should stop talking only to its fellow members and talk instead to those

who are perhaps not aware personally of the importance of good roads.

We use the adjective "proper" in describing the highway story that should be told, since this is the side that is usually neglected. Any graft or corruption, whether it be at high or low levels, usually is uncovered, and fortunately so, and brought out in the open for all to see. Fortunately, too, such instances of improper conduct on the part of highway engi-

neers, contractors and suppliers are few in number. But such misconduct gets the full treatment in publicity. As Representative George H. Fallon (D., Md.), chairman of the House Subcommittee on Roads, remarked recently to a highway gathering about some isolated unethical practices brought to light: "Like thousands of marriages that have held together for 30 or 40 years, there is no publicity, but a juicy divorce case always gets the headlines."

So let us then during this coming National Highway Week emphasize the constructive features of the Road Program—the many benefits it brings to the economy, as well as to the social and cultural lives of individual Americans. It is necessary also to point up the need for a steady continuing roadbuilding program in order to catch up to and keep abreast of the ever increasing number of private automobiles and trucks that are congesting our highways and business districts in practically every town, village, and city in the country. Tell the highway story to your employees, your friends not in the industry, at club meetings, at church or school gatherings in your community.

What to tell them? If you feel the subject is too vast or complicated for you to bring down to the level of a neighborhood discussion group, get in touch with the Better Highways

Information Foundation, 2000 K Street, N. W., Washington 6, D. C. This non-profit, public service organization has developed and prepared a wealth of "good roads" literature describing highway needs in a language that the general public can readily understand. This material can form the basis for speeches before local groups, or can be given to your local newspapers and radio and television stations for further dissemination to the public. BHIF has posters that can be displayed in social halls or business establishments. It has just produced a color motion picture that describes the benefits of better highways, particularly to industrialists and commuters.

All of this, plus a veritable storehouse of background material on the Road Program, is available from BHIF at cost. For a nominal charge, you contractors, engineers, equipment manufacturers, materials producers and equipment distributors can embark on a public information program of your own, not just for your industry but for your own welfare.

The foundation itself is engaged to the limit of its resources in promoting National Highway Week throughout the country. Several special events of particular new value are to be staged and these will be covered by national TV and radio networks. Public information direc-

Surveying Washington..

by E. E. Halmos



The shift of missile-base work to the Air Force is the key reason behind the Corps of Engineers' reorganization program, which cuts the number of district offices from 31 to 17 because of the resulting drop in military construction work. The shift has little effect on Corps organization dealing with Civil Works construction, however. And it must be emphasized that the changes have nothing to do with recent announcements that Defense Department will close or curtail some 73 military installations (52 in the U. S.) around the world. The missile-base work shift came with stunning suddenness—particularly after the heavy criticism of Air Force activities in recent House committee hearings. However, under the change, the head of the new Civil Engineer Ballistic Missile Construction Office is shifted for "operational control" to the Air Force's newly-created Systems Division—a part of the equally new Systems Command. That doesn't mean that the office puts on Air

Force blue uniforms—but it certainly now takes orders from AF. It could aid contractors working on missile bases in that it now sets up a definite chain of command and procedures that may lessen complication.

Engineers aren't happy with the idea of a "Science Academy" (along the lines of the military academies). That was obvious in hearings before a House committee on a bill to establish such an academy, introduced by Rep. Victor Anfusa (D., N. Y.). Reason: Such an academy would tend to bleed existing engineering schools of staffs and students—and present institutions can handle the job.

Highway program financing has been delayed in moving through Congress by a parliamentary bobbie by the Democratic leadership—a bobbie almost exactly the same as one made two years ago with one of Gen. Eisenhower's proposals. The result has been the same: A lot of hurt Congressional feelings, and refusal

of Congressmen on either side of the political aisles to formally introduce President Kennedy's proposals. It has also given Congressmen a chance to take a searching look at the proposals—with the probable result that at least one of them (for using trust fund money for family relocation) will be knocked out of final action. Here's what happened: President Kennedy sent his highway proposals (including authorization of Interstate and ABC roads, financing proposals, etc.) to Capitol Hill, asking speed. House leadership sent the proposed bill to Ways and Means Committee—and this is a breach of normal procedure. Usually, such bills go first to Public Works Committee (for authorizations) then to Ways and Means for the money. Public Works committeemen took it as an insult, introduced their own bill (HR-5200) covering only authorizations. The end of this will probably find

Kennedy's proposals tacked onto the Public Works bill—but the delay has already been occasioned.

Broadening of Export-Import Bank policies is seen as a major help to construction machinery manufacturers—and it might be logically extended, sometime soon, to contractors. Under new policies, Ex-Imbank will now back a comprehensive system of all-risk guarantees (including loss for political reasons) for consumer goods (including machinery) sold with short-term or medium-term financing. It is hoped that this will place U. S. manufacturers in competitive position with foreign companies. At a series of conferences last year, contractors asked similar guarantees for themselves so that they could compete with foreign contractors who offer "package" deals, often including financing. There's evidence that this proposal is getting Ex-Imbank consideration.

The proposed housing program of omnibus proportions, running from long-term (40-year) no-down-payment loans to housing for the elderly, and including establishment of an Urban Affairs Department at cabinet level, has been estimated to cost \$3 billion a year. But the whole package is so unwieldy (and so many of its components are controversial) that the likely result will be a breakup into a number of bills, some of which won't get through.



CONTRACTORS AND ENGINEERS

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As William Froehlich, chief deputy
secretary of the Pennsylvania De-
partment of Highways, and chairman
of the committee on public infor-
mation, American Association of State
Highway Officials, recently remarked:

"The amount of work which road-
builders can expect in the months
just ahead will depend on how good
a job the industry and the state high-
way departments do in arousing
public support for state and national
highway programs."

Two Washington construction de-
velopments are of broad interest: ac-
tion by the city's Industrial Safety
division in citing a contractor (Norair
Engineering Corp.) for six violations
of safety standards in construction
of a \$36 million new Smithsonian
museum (scaffolds without proper
railings, material strewn in walkways,
using improperly grounded electrical
equipment, etc.); and purchase of one
of the city's biggest contracting firms
—Charles H. Tompkins Co.—by the
J. A. Jones Construction Co. of Char-
lotte, N. C.

Bills in the hoppers provide inter-
esting sidelight statistics. As of April
3, Congress had been in session 48
days and the House had received
6,939 bills and the Senate 1,705, for
a total of 8,644. Total bills enacted
into law was exactly 13.

Other spending proposals for con-
struction are still to come—princi-
pally for schools and housing. Both
of these measures face rough sledding,
and odds on their passage are falling
somewhat, though they still favor
some sort of legislation. The school
issue (which could run over \$2 bil-
lion in the first year) has been seri-
ously clouded by debate over aid to
private institutions (as well as con-
tinuing Congressional doubts as to
the extent of need). And the housing
proposals are partially in doubt for
a simple reason—it is almost im-
possible to put a price tag on them.

But let no one assume that some-
thing is being done in his state. He
should inquire now both of his own
trade association and the state high-
way department public relations di-
rector if special projects will be un-
dertaken during Highway Week. And
he should volunteer his support in
whatever is being planned. Those
comprising the highway construction
industry should not fail to take ad-
vantage of the opportunity to capital-
ize on and promote this important
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But let no one assume that some-
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Buttenheim names Allen publisher of C&E

■ Donald V. Buttenheim, president,
Buttenheim Publishing Corp., an-
nounces the appointment of Edward
George Allen, Jr., as publisher of *CON-
TRACTORS AND ENGINEERS* magazine,
succeeding the late Robert C. Burton.
Allen is also publisher of *Mart* maga-
zine, a Buttenheim publication in the
appliance-television industry, and will
continue in that position.

Allen, 42, joined *CONTRACTORS AND
ENGINEERS* in 1946 as midwest sales
representative and in 1952 became
business manager. He relinquished
his C&E duties in 1956 to publish the

newly acquired *Mart*.

Born and educated in Philadelphia,
Allen started his career doing pub-
licity for the Philadelphia Symphony
orchestra. After three years he shifted
from music to construction when he
became sales promotion manager for
a building-materials firm. He served
in the U. S. Army during World War
II. During the Korean action he was
recalled to duty and assigned as a
public information officer stationed
in Germany.

Allen makes his home in Green-
wich, Conn., with his wife and nine-
year-old daughter.



Edward George Allen, Jr.

HEIL-TEC dump trailers



Exclusive design cuts dead weight...lets you haul up to 4,000 lb more payload

Exclusive design of TEC frameless dump trailers—
engineered for maximum strength and stability with
minimum tare weight—saves 1,000 to 2,000 lb per
unit compared to conventional frame-type trailers.
TEC frameless dump trailers can be furnished in long
lengths to permit forward location of lower fifth wheel
on tractor, and also obtain long extreme axle spacing
as required in many states. Payload can be increased
as much as 4,000 lb in certain states... and even more
where longer axle spacing is desirable.

Aluminum boosts payload

With aluminum construction, you can haul an extra
2,400 to 3,000-lb payload. Weight-saving HY-TEC
and HY-SPILL design and aluminum construction
actually can soon pay for itself in increased income.

TEC builds single axle and tandem semi-trailers for
use with either single axle or tandem tractors. Single
axle trailers are available in body lengths from 16 to
28 ft, and tandem axle units in lengths from 20 to 34 ft.

TEC design gives you on-the-job advantages

- Exclusive HY-SPILL design permits dumping into high
hoppers, paving and spreading machines.
- Body can be raised or lowered while moving, with better
stability than any other hauling unit.
- Trailer can be dumped while jackknifed, speeds dumping
and turn-around in tight places.
- Excellent balance and maximum stability let you haul and
dump safely and efficiently on rugged job sites and off-
highway conditions... anywhere your truck can go.

HY-SPILL dump trailers increase the versatility of your hauling
rig. Exclusive, patented design holds front tandem wheels on
ground during dumping, provides 38 to 40-in. spill height from
end of body floor to ground. Clearance is ample for high stock-
piling, dumping into above-ground hoppers and paving and
spreading machines.



Fleet of HY-TEC dump trailers operated by a large Midwestern
sand and gravel producer. First two units in foreground are
aluminum.



HY-TEC FRAMELESS TYPE
U.S. Patent No. 2,846,267



HY-SPILL FRAMELESS TYPE
(Available Only From Heil)
U.S. Patent No. 2,853,341



THE HEIL CO.

DUMP BODIES and HOISTS

TEC Division, 1285 West 70th Street, Cleveland 2, Ohio

For more facts, use Request Card at page 18 and circle No. 254

Tricks of the Trade

Look, Ma, no baloney!

There's no bologna cable for the big gantry cranes at Wanapum Dam in Washington; this is proving a real convenience, and it's saving money and reducing maintenance problems. Power is fed to the cranes from three bus bars that are under a protective cover paralleling the rail. A shoe attached to the foot of the gantry picks up the power from the bus bars as the machine moves along the rails.

In addition to eliminating the expensive bologna cables, this system eliminates the need for continuous watchfulness to avoid damaging cables as the machines move. It also reduces the costly maintenance to broken or damaged cables.

The bus bars are protected on three sides by metal covers strong enough to deflect small objects that might drop on them. The covers provide adequate protection for workmen who might have to step over them. The contact shoes reach up through the opening at the bottom of the cover to engage the bus bars.

The picture shows the bottom of one of the Washington revolving cranes on a 60-foot gantry placing concrete in a block of the inlet structure. A Gar-Bro 4-yard bucket and the Gar-Bro automatic bucket hook are in the background, and a C. S. Johnson concrete plant is in the distance.

Wanapum Hydroelectric Development, a reinforced-concrete and earth-fill structure in a modified Z shape, is being built by a joint venture of Grant County Constructors, which has Morrison-Knudsen Co., Inc., Boise, Idaho, as the sponsor, and includes Henry J. Kaiser Co., Oakland, Calif.; Macco Corp., Paramount, Calif.; Raymond International, Inc., New York City; and F & S Contracting Co., Butte, Mont. The structure will have a total length of 8,320 feet, with a spillway section 820 feet long and earth dikes that will extend from the concrete structure to solid abutments.

The dam, a sister unit to the Priest Rapids development, is being built for the Grant County Public Utility District, and completion is scheduled for late in 1964.



LUBE LOGIC 5 new ways to



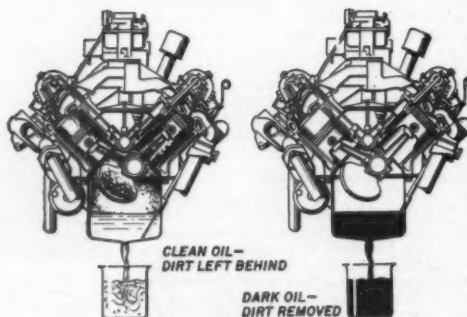
Warm bath restores wire rope

The best way to get lubricant inside a cable, where it's really needed, is to immerse the cable or wire rope every 500 hours or so in a bath of warmed-up Texaco Crater A lubricant. It pays off by giving you far longer service life than you would get simply by applying Crater A externally.

This warm-bath treatment requires a horizontal trough to hold the lubricant. The trough should be fitted with pulleys to keep the cable completely submerged while it's passing through. A burlap collar should be rigged to wipe

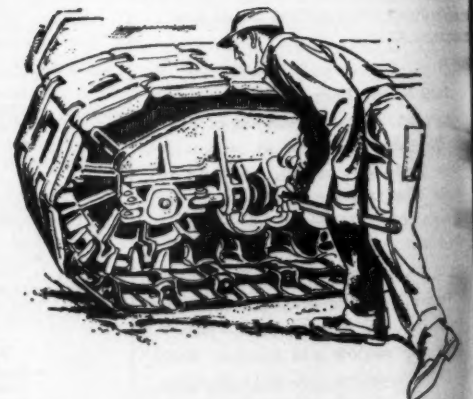
off excess lubricant as the cable leaves the box. An immersion of about a minute will allow the lubricant to work well into the strands.

This process is *not* an alternative to other lubrication. You should continue to clean the cable and apply Crater A externally every 10 to 100 hours, depending on the type of work the cable is doing. Remember also to be very sparing with lubricants on cables that wind on clutch-equipped drums, and never lubricate cables that are dragged in dirt.



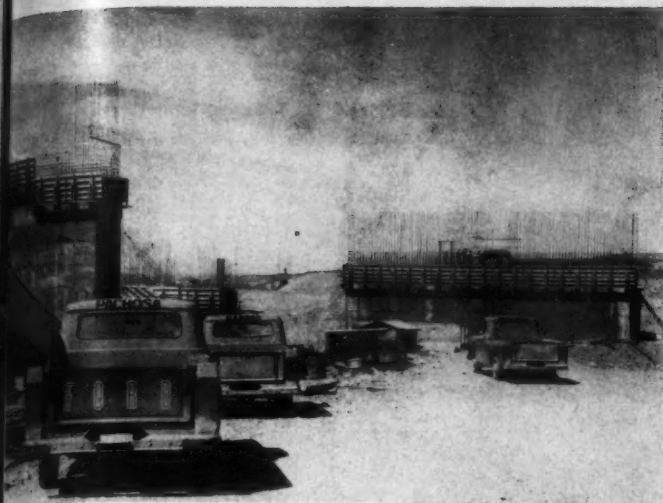
Dark engine oil... sign of a hard worker

Here's a motor-oil misconception that's still common enough to need discussion. Some folks think that the better an engine oil is, the more likely it is to come out as clean as it went in. The truth of the matter is just the other way around. A good detergent-dispersant oil holds onto dirt like an old friend. It keeps dust, soot and carbon in suspension, and carries it out of the engine when you drain the oil. Oil that looks clean when you drain it from the crankcase is a sign that these contaminants may still be inside the engine. Moral: oil that darkens in use is really doing its job.



No-sweat way to adjust crawler treads

Crawler treads are easier to adjust if you dab a little Texaco Threadtex on the adjusting screws. The Threadtex stays put through months of service, keeps the screws free-turning and corrosive-proof. Another good use for Threadtex is on track bolts, when you're making up track. A little dab of Threadtex on the bolts will save a lot of time and work in taking down track after it has been in service.



Names on pickups identify foremen

When there are from two to a dozen supervisory personnel on a job, all driving similar rigs that are painted identically, it is often difficult to identify a particular man quickly. "The man with the hard hat driving the yellow pickup" becomes an inadequate

description that applies to many. Strangers, and even workmen on the job, may waste considerable time trying to locate a particular foreman or superintendent.

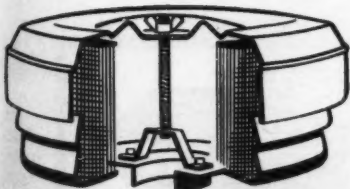
At the Wanapum Dam project on the Columbia River near Vantage, Wash., the contractor put an end to this problem by lettering the name of each supervisor in big bold letters across the back of his pickup. Identification is instantaneous.

The contractor on this job is a joint venture called Grant County Constructors, sponsored by Morrison-Knudsen and including Kaiser, Macco, Raymond, and F & S. Most of the equipment, including the pickups, is painted M-K's yellow and brown. As the accompanying picture illustrates, the names of the supervisory personnel show up very plainly.

How to trim downtime

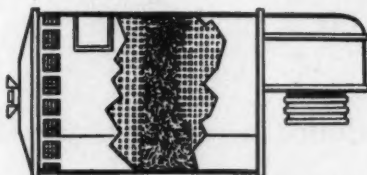
Key points on air filter maintenance

In a day's operation a typical engine inhales several thousand cubic feet of air, and on a construction project all that air is probably loaded with abrasive dirt and dust. Good air-filter maintenance is the only way to make sure your engine gets the air and *not* the dirt. Here are some maintenance tips that will keep your filter working better through thick and thin.



Dry-type air cleaners (the ones with the fluted paper element) should simply be shaken or tapped lightly to move dirt, and reinstalled. Never clean dry-type elements with kerosine or diesel fuel.

Additional precautions: empty centrifugal pre-cleaners when the glass container is half full; don't move the oil cup when the engine is running.



If your filter is the wire gauze type, and you want to re-use the element, wash the gauze in kerosine or diesel fuel, shake it dry (*don't* blow it with compressed air) and re-oil it with SAE 40 or SAE 50 oil to coat the element.



Oil-bath type air filters won't function properly if there's more than a half inch of sediment at the bottom of the oil reservoir. Check the sediment level by sticking a screw-driver down into the oil, and if you're anywhere near the half-inch level the bowl should be cleaned out and refilled. Also, inspect the filter every 5 to 50 hours to make sure the oil itself is at the right level. Every 500 hours the whole cleaner should be dismantled and cleaned, and refilled with new engine oil of the same grade used in the crankcase.

Plan rack easy to build



A dozen coat hangers and a short length of reinforcing rod are all you need to build this simple rack for highway plans.

The rod serves as the horizontal bar for the metal hangers. Each set of plans straddles a hanger, which is simply removed when the plans are in use.

Engineers of the Missouri State Highway Commission improvised the rack for their field office on Truman Road in Kansas City. Bill Ellis, assistant resident engineer, is shown selecting a set of plans.

New Texaco movie can help boost your profits

TEXACO PRESENTS:
"A PLAN FOR PROFITS"

This factual, down-to-earth presentation shows you how 1% of your total budget (the amount usually spent on lubricants) can minimize a major cause of equipment downtime.

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SEE: How one contractor lubricated 21 different types of equipment with only seven products.

SEE: "A Plan for Profits"—Texaco's newest sound and color movie.

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JOE IS PROUD OF HIS

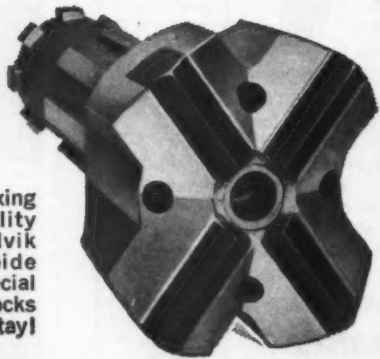
Good reason, too! He's got a 9-inch down-the-hole bit from Sandvik-Coromant, and that means he's got a bit that's better than he's ever used before!

Strong statement? Sure. But here's proof:


First, Sandvik is one of the world's largest and most experienced manufacturers of tungsten carbide. Therefore, Joe gets the highest quality carbide possible. From more effective refining, through better mixing, to more careful control of grain size—everything possible is done to assure Joe longer bit life and more feet between sharpenings.

More proof: Sandvik carbide inserts *stay in*, thanks to our unique brazing method. And since the entire bit is made from Swedish steel—Joe knows breakage won't be a problem.

You'll be happy with Sandvik-Coromant down-the-hole bits, too. They're available from 4¾ to 9 inches in diameter, and for all types of rigs. Get in touch with your nearest Atlas Copco office today, or write to Dept. CAE-61-1.



Better refining, mixing and over-all quality control by Sandvik means best carbide possible. And a special brazing method locks the inserts in to stay!



Sandvik down-the-hole bit bodies are made from Swedish steel by Swedish craftsmen. Result: less breakage...longer life!

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ENGINEERS

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Autocar "Loggers' Special" carries 8000 board feet of pine over rugged mountain roads.



Autocar Custom-Engineered Tandems move the heaviest construction equipment.



Autocar "Michigan Special" hauls 47-ton payload, making the most of Michigan laws.



Custom Builders to the Trucking World

Wherever hauling duties are rugged and steady . . . wherever maximum performance is crucial, back comes the message, "We need Autocars . . . nothing less."

So you find Autocar working on the toughest construction jobs all over the world, carrying maximum legal loads under the many varying state laws, doing the roughest off-the-highway/over-the-highway work.

Every Autocar is custom-engi-

neered from "rubber to roof" for its specific job. Components are perfectly matched throughout its design and construction—always with an eye to quality. Frame rails, for example, are made of the finest steel . . . custom-drilled to avoid unnecessary holes and to assure perfect alignment of components.

For you, Autocar produces just the truck, at a reasonable cost, that will earn the most on your invest-

ment. Buy less if you can afford it—but where every dollar counts, buy the "World's Finest."



Division of
THE WHITE MOTOR COMPANY
Exton, Pa.

For more facts, use Request Card at page 18 and circle No. 257

CONTRACTORS AND ENGINEERS

"Brother, what an Oliver OC-46 means to a growing firm!"

says Frank Mallick, Horsham, Pa., contractor

One hundred and forty feet of 3' x 20" trench in only three hours! That's just one reason why Mr. Mallick thinks it's wise to own an Oliver OC-46. He subcontracted on a 93-unit FHA housing project to dig all foundations, pour 8" footings and lay block walls—and he used his OC-46 for all jobs.

The Oliver OC-46, with handling fork attachment, picked up 2800 pounds of blocks from the stockpile with each pass and delivered these blocks to the foundation. "No other tractor can carry heavy block loads like this over light planks stretched over the trench—and then maneuver successfully in tight quarters," said Mr. Mallick.

Speed, versatility, easy operation—that's what makes the OC-46 a true partner in Mr. Mallick's growing business. With "Spot-Turn" steering, the OC-46 offers maneuverability unmatched by any other compact crawler. A full line of attachments tools up the OC-46 to handle any job. A free demonstration on your job will prove to you what an Oliver OC-46 can mean to your growing firm.

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OLIVER
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Jobs, jobs, jobs—see how valuable the OC-46 can be in your operations. Review its many important features and job advantages in this big, colorful catalog.





Sand and four sizes of coarse aggregate for Ice Harbor Dam, produced from a pit by a subcontractor, Curtis Construction Co., Spokane, are trucked six miles to the south-bank storage silos. One of Curtis' shop-built 33-yard trailers pulled by an Autocar diesel truck dumps its load into the Noble 30-yard hopper.

Gravel production for Ice Harbor Dam

Dig these mixed-up aggregates!

Four sizes of gravel are separated
combined
separated again
before going into a mix

Contractors and Engineers staff article

If concrete aggregates could think, those for the north-bank construction at Ice Harbor Dam would be plenty confused by the time they are finally incorporated into the concrete structure.

Between their original state in the gravel pit and their final placement in the structure, this is what happens: They are processed into five sizes. Four are recombined to cross the river on a suspension-bridge conveyor. At the concrete plant, they are again separated, only to be promptly mixed back together to make the concrete.

This carefully planned operation is designed to make the most efficient use of the suspension-bridge conveyor that must bring the materials across the Snake River.

While the work on this contract is confined almost entirely to the right or north bank, the source of gravel is on the south side. Since the nearest highway bridge is at Pasco, too far downstream, Guy F. Atkinson Co., general contractor for the north-bank work, built a suspension bridge to convey the aggregates across the river.

The sand and four sizes of rock are processed at the pit to meet specifications and are stockpiled over recovery conveyors. These materials are trucked to a receiving terminal on the south bank at the dam site where the respective sizes are stored in five big bins.

No aggregate storage is provided on the north bank except the 500-ton capacity of the five bins of the Noble concrete plant. When the plant operates at full capacity, the conveyor must also run at full capacity to maintain the supply in the bins. To accomplish this, Atkinson mixes the four sizes of coarse aggregates on the belt, then separates them in a rescreening unit mounted above the plant.

Since the plant produces as many as 12 different concrete mixes with different proportions of aggregates, the delivery of the precise amount of each size of aggregate is a continuous problem. The plant superintendent must compute a proportioning of the sizes that represents the composite of the mixes being produced and the relative volume of each. The Syntron feeders in the bottoms of the storage bins are adjusted to deliver just these volumes so that the plant bins are always supplied but never overflow.

The Ice Harbor Lock and Dam is the first of a series of multipurpose structures on the lower Snake River in southeastern Washington. The north-bank construction, the second major construction contract, is being built for the Walla Walla District of the U. S. Army Corps of Engineers by the Guy F. Atkinson Co., South San Francisco, Calif., under a \$21 million contract.

Personnel

Atkinson's supervisory staff on the project includes project manager Vernon Bradley, assistant project manager Joe K. Scharf, general superintendent John Bowman, project engineer Donald K. Stager, and concrete-plant superintendent Ralph Knight. For the aggregate subcontractor, Curtis Construction Co., Jack Edwards is superintendent.

Representing the Corps of Engineers on the job are resident engineer Leonard G. Esty, assistant resident engineer W. P. Eng, chief of construction K. F. Ramsey, and chief of materials R. F. Barker. The district engineer for the Walla Walla District is Col. Paul H. Symbol. **THE END**



In the concrete plant on the north bank, remote control regulates the flow of each of the four sizes of rock from the silos on the south bank. This delivers proper proportions for the mixes being turned out.



Syntron feeders respond to remote controls and feed the several sizes of aggregates onto the belt simultaneously at the required rates. Sand rides the belt across the river by itself.

of coarse aggregate for Dam, purchased from a subcontractor, Noble Co., 5 miles to the south. One of the yard trailers, a diesel truck, the Noble 50-



Leaving the storage silos on the south bank, the aggregates cross the Snake River on a conveyor carried on a suspension bridge. The bridge spans 800 feet between its steel towers, which rise 100 feet. Powered by a 75-hp motor, the Joy 30-inch lightweight conveyor travels at 450 fpm.



At the north bank, the aggregates pass through a Tyrock double-deck rinse screen and up the inclined conveyor to the rescreening unit at the top of the Noble plant. Four Koehring mixers on a lower platform discharge the mix into hoppers that load Gar-Bro 4-yard buckets.



Two Nordberg vibrating screens rescreen the coarse aggregate, sending each size to its respective bin. This 5 x 10-foot screen picks off the two large sizes. A 5 x 12 below separates the 1½ and ¾-inch.



Cement and pozzolana, stored in silos high on the north bank, travel the Fuller Airslides in the foreground to a pair of 18-barrel bins in the plant. Screw conveyors carry the material to weigh buckets.



The operator at the console of the automatic Noble concrete plant selects any one of 12 mixes simply by manipulating the push buttons. Since these mixes all use different proportions of the several sizes of aggregates, the real trick is to keep the mixture of aggregates coming across the river so that the plant bins are supplied but not overflowing.

Savings in time and scraper maintenance result as

Dozers and loader dig highway cuts

by RALPH MONSON, field editor

A setup geared for materials handling is adapted successfully to take a roadway cut for Interstate 90 at Superior, Mont. A tractor-dozzer is pushing the material to a Kolman 60-inch loader, powered by a Cat D13000 engine, which fills a mixed spread of scrapers and trucks.

Faster loading of a mixed spread of haul units and definite savings in maintenance resulted from an unorthodox grading operation on Interstate 90 at Superior, Mont. Instead of the usual push loading of scrapers and shovel loading of trucks, three dozers pushed the material to a trap from which a big conveyor loaded it into both scrapers and trucks.

The three dozers, two Cat D9's and a D8, worked without interruption pushing the heavy gravel material to the trap and also building the grade in the cuts. The Kolman 60-inch loader, powered by a Cat D13000 engine, filled the haul units in less time than they could be loaded by pushing or with a shovel.

Under favorable conditions, the DW21 scrapers were loaded in 20 to 22 seconds. The big bowls of the Cat 482 scrapers pulled by DW20's took a bit longer—about 30 seconds. The 15-yard Mack B81 end-dumps were heaped in less than 20 seconds, and the Ford T750 10-yarders filled up still faster. Best of all, the haul units could be loaded by the one loading machine in any sequence. This made the relatively small spread extremely flexible in responding to variations in length of haul.

One of the biggest advantages to the contractor, Zook Bros. Construction Co., Bigfork, Mont., was the noticeable reduction in the maintenance requirements of the scraper spread under this method of loading as compared with push loading. The very coarse heavy gravel material was an important factor in the heavy wear



A DW20 fords Cedar Creek en route to the embankment after picking up a load in about 30 seconds. The 15 and 10-yard trucks on the job were loaded in even less time. With the loader operating almost continuously, the cut was made fast and with far less maintenance required by scrapers than when they were push-loaded in the heavy gravel material.

Material is dumped on the grade by one of the Mack 15-yard end-dumps. Careful control of the moisture content in the material was maintained, and the travel of the heavy equipment over the grade was enough to attain required compaction; no rolling was needed.



and tear on scrapers in push-loading operations.

Work in cut or borrow

The loader worked with equal efficiency in the larger roadway cuts or in the several borrow pits that supplied nearly half of the embankment material. Very little time was lost in moving the loader from one cut or borrow pit to another, and the scrapers and dozers kept right on working on cleanup and finish grading while the loader was being moved.

The contract, awarded by the Montana State Highway Commission, provided for the construction of 6.686 miles of highway through and adjacent to Superior. This included 1.228 miles of 4-lane divided roadway, an interchange in the city, and 5.458 miles of 2-lane highway on both sides of town, with bridges over the Clark Fork River.

The \$1.1 million contract called for the placing of 1,286,071 cubic yards of embankment, and included the relocation of a 3,400 x 75-foot airstrip. On the roadway, the quantities included 607,351 cubic yards of excavation, 511,196 cubic yards of borrow, and 548,415 mile-yards of overhaul over a 1,000-foot free-haul distance.

Over the grading section, the contractor placed 0.85 feet of minus 3-inch gravel subbase in three lifts and a single 0.15-foot lift of minus 3/4-inch base. The surfacing, consisting of two 2-inch lifts of asphaltic concrete, was sublet to the Richardson Construction Co., Inc., Miles City, Mont.

Zook got the job under way early last spring since the gravel soil was

not much affected by frost or moisture. However, the material immediately proved difficult to load with scrapers because of the heavy volume of large rocks ranging from 6 to 18 inches or more in diameter. Not only was the loading slow, but the scrapers were taking a beating.

Switching to the dozer and conveyor-loader operation put a sudden end to these troubles and improved the over-all efficiency of the job. The use of this equipment in the borrow pits was not materially different from the usual pit operation. It was on the roadway cuts that the contractor's ingenuity paid off.

The conveyor and trap were set up at one end of the cut so that the haul units could work away from the area and not have to travel through it. The dozers started at one end, pushing the material up to the trap, and keeping a substantial surge pile to insure continuity of operation.

As the cut was worked down, one of the Cat 12 or 14 motor graders kept the backslopes trimmed and finished. When the dozers got down to finish grade, there was little to do except clean up the remains of the surge pile when the loader was moved. The 2-shift operation moved around 10,000 cubic yards of material per day.

Hauls ranged from a few feet to a maximum of about a mile and a half. By augmenting the scraper spread with trucks as the situation demanded, the contractor was able to keep the loader operating practically continuously without having a lineup of equipment waiting to load.

With the addition of the proper

(Continued on next page)

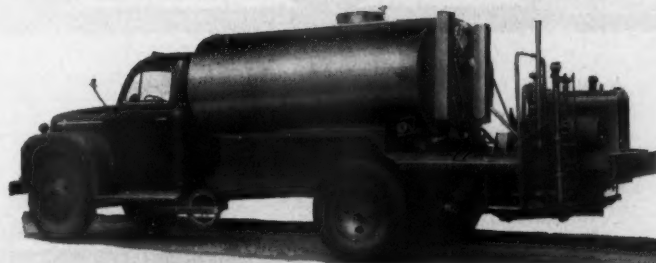


This Lima Austin-Western plant producing the hot-mix aggregates for the job gets material directly from a conveyor fed by a trap and tractor shovel. A grizzly separates the oversize, which is routed to the waste pile at right, background.



Finished material goes to a Lima surge bin, and a conveyor loads trucks hauling to the roadway or to stockpiles. A Ford T750 truck is being loaded here. A water spray at the end of the conveyor adds moisture when base rock is being loaded.

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The Model 424-56 is built in 1000, 1250 and 1500 gallon capacities as standard and can be furnished in other capacities, either truck or semi-trailer mounted.

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Standard Steel Works, Inc. NORTH KANSAS CITY, MO.

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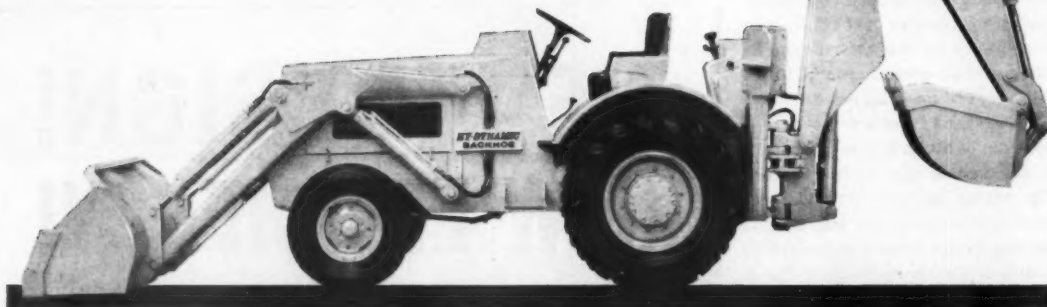


Roadside repair is handled beside the grade by a well equipped service crew. The truck is fitted with tool boxes and an electric welder.

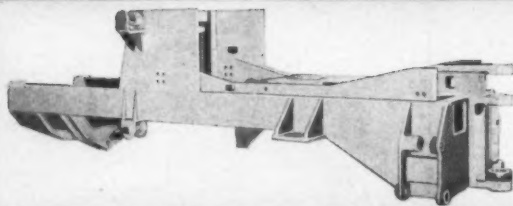


Servicing is done during lunch break and between shifts by a crew with a new truck that carries 2,000 gallons of diesel fuel, 1,000 gallons of gasoline, and a complete 5-reel greasing setup.

A COMPLETELY INTEGRATED **DYNAHOE** LOADER-TRACTOR- BACKHOE UNIT



A NEW
CONCEPT
IN MACHINE
DESIGN...



Massive Foundation
Frame. Only this de-
sign can provide the
stamina and strength
so vital to successful
heavy duty Backhoe
performance.

Designed and Built by men with many years of experience

SPECIAL EXCLUSIVE FEATURES

Unit Construction: The complete Loader-Tractor-Backhoe is built as ONE INTEGRATED UNIT... differing completely from machines consisting of a standard tractor to which loader and backhoe attachments have been added.

New Operating Advantages: Extremely easy to handle... unusual visibility for both backhoe and loader operations. Operator's seat quickly pivots to either loader or backhoe controls. Either 4 or 6 handle backhoe controls.

Extremely Heavy-Duty Construction: All major component parts, such as frame, buckets, booms, dipper, etc., are exceedingly heavy duty.

Good Traction: Maximum tire flotation is provided in BOTH front and rear axles.

Oversize Pins and Bushings:... for greatest strength and wear... Zerk fitting lubricated.

Fast Swinging and Digging: Adequate hydraulic power guarantees especially fast backhoe boom swinging and digging action.

Loader Bucket: 3/4 yd. struck.

Backhoe Bucket: 7.8 cu. ft. std. Digs 14 ft. deep.

Adequate Cooling: Oversize radiator, fan and hydraulic oil coolers prevent overheating of oil or water under all conditions.

Exclusive Design: The only machine engineered as a single, completely integrated Loader-Tractor-Backhoe unit.

Power Steering: Easier to drive on the road and to operate in the field. Adequate weight on steering wheels for 18 to 20 m.p.h. highway travel.

Transmission: 3 speed with torque converter and power shift forward and reverse provides easier, faster operation for all backfilling and loading jobs.

Buckets:... are of extra heavy construction. Bucket teeth with replaceable caps on Backhoe.

Weight Distribution: The unit has proper weight distribution on both rear and steering axles to provide the best flotation, operating and best highway driving characteristics.

Heavy Planetary Rear Axle.

65 H.P. 6 Cyl. Engine.

For further information and the name of our nearest distributor, phone or write:

DYNAHOE

MANUFACTURED BY
THE HY-DYNAMIC CO.
413 SKOKIE HIGHWAY, LAKE BLUFF, ILLINOIS
CEDAR 4-5400

(Continued from preceding page)

amount of moisture, the material compacted very readily. In fact, with the trucks, scrapers, and tractors operating over the fills, the desired compaction was attained without any rolling.

Three tank trucks applied water to the material as it was spread on the grade. Two of these were GMC trucks with 5,000-gallon tanks. The third was a Reo with a 2,800-gallon tank. The water was pumped from the Clark Fork River and Cedar Creek by Gorman-Rupp and Marlow pumps.

In finishing the grade, select fines from one of the cuts were mixed with the gravel on the roadway. This mixture was like a pavement when it was compacted. It was so hard that the tractor operators chose to travel in a field alongside rather than rattle over this hard finished grade.

Base and surfacing

The aggregates for the base and surfacing were produced from a gravel deposit adjacent to the right-of-way. Zook Bros. set up a Lima Austin-Western No. 111 crushing and screening plant to process the gravel.

A Michigan 275A tractor shovel delivered the raw gravel to a trap, and a conveyor delivered it to a grizzly ahead of the plant. The oversize picked off by the grizzly was wasted by a side conveyor. The finished material from the closed-circuit plant went by conveyor to a Lima surge bin, from which trucks were loaded by a conveyor.

On the two sizes of base material, water was added as the material was loaded. Spraybars at the end of the loading conveyor applied the correct volume of water to attain optimum moisture content. The Mack and Ford trucks delivered the base materials to a Jersey spreader on the roadway. Compaction was accomplished with a Ferguson 25-ton roller.

The same crushing and screening plant produced the aggregates for the bituminous surfacing. This material was trucked to a nearby stockpile from which the hot-mix plant will operate this season.

Lubrication and preventive maintenance were handled right on the job, together with any required re-

CONTRACTORS AND ENGINEERS

pairs. A service crew fueled and lubricated the haul units during lunch periods and between shifts. This crew used a Reo truck that carried a 2,000-gallon diesel-fuel tank, 1,000 gallons of gasoline, and a complete 5-reel lubrication setup.

The field mechanics had a flat-bed Ford truck fitted with a Hobart electric welder and toolboxes. They also used a Mack winch truck with an A-frame to lift heavy components. It was not uncommon to see this crew working on a machine right beside the roadway, making the necessary repairs to get the rig back in service as soon as possible.

Tire maintenance was handled under contract by the General Tire Co., which had a tire-service rig on the job equipped with an overhead monorail for handling the heavy tires.

On completion of the grading operation, favorable fall weather permitted the placing of much of the base. The balance of the work, including the bituminous surfacing, will be completed this season.

Personnel

Don Zook, a partner in the firm, kept a close eye on all of the project operations. Foremen of the morning and afternoon crews, respectively, were Melvin Ranes and Arthur J. Holland. The crushing operations were supervised by foreman Dave Benson. The master mechanic is Wally Floren.

For the Montana State Highway Commission, Cecil Owen is serving as project engineer. The project is under supervision of the Missoula district, with Oscar Ostenson as district engineer. The division engineer is Sam F. Thompson. Lehman B. Fox is construction engineer for the Montana department, and Fred Quinnell, Jr., is state highway engineer. THE END

Cement production to be stepped up in U. S. S. R.

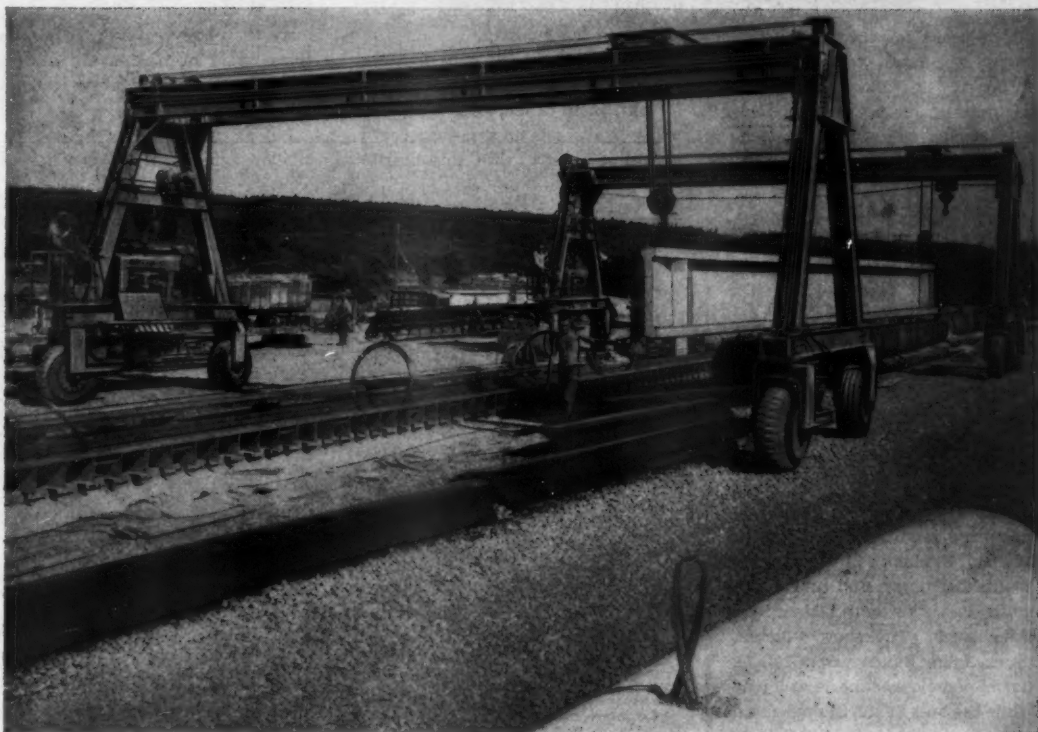
■ According to a recent article in *Investia*, the Central Committee of the C. P. S. U. and the Council of Ministers of the U. S. S. R. have adopted a decision to accelerate the development of the cement industry in the period 1961-1965.

The U. S. S. R. expects to produce 51 million tons of all grades of cement in 1961, an amount that is 1½ times as great as the cement production in 1958. New cement-mill construction in the coming five years is expected to increase the production capacity of the mills by over 40 million tons. Such construction would result in a total output of up to 84.6 million tons by 1965, or 2½ times the 1958 production figure.

Provisions are made for the construction of 26 new cement mills, as well as the expansion and reconstruction of 45 mills now in operation. To improve the geographic distribution of cement mills, production will be launched in all Union Republics. It is planned to increase the production of high-grade portland cement from 14.9 million tons in 1958 to 55 million tons in 1965. The measures are de-

MAY, 1961

from prestressing form to finished beam Travelift by Drott carries the load



Sturdy, but gentle, Travelifts make quick yet careful work of almost every handling job in modern prestressed yards. They are glove fitted for loading wire reels, close spotting forms, easing beams from beds, even loading prestressed units onto flatbeds.

What's more, Travelift is completely self propelled

and can traverse to provide unlimited handling ability of even the most awkward loads. Every operation is hydraulically controlled by one man from a full-view operator's platform.

Travelift costs less than you think — for most models as little as \$1000 per ton of lifting capacity.

EVERYDAY TRAVELIFT IS SAVING SOMEONE MONEY IN A NEW WAY



Travelift cradles precast plank for transport. Travelift precision pours concrete into water main from stockpile to a wall-pipe form. Here two "A" frame Travelifts straddle a beam to load this prestressed beam for transport.

Travelift
Division of DROTT Mfg. Corp.
Sturgeon Bay, Wisconsin

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Investigate the limitless possibilities Travelift offers your company. Fill out and mail the coupon below today.

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I am particularly interested in the following capacities:

12 ton ☐ 25 ton ☐

signed as a basis for the development of industrial, housing, and rural construction in the U. S. S. R.

According to industry figures in this country, mills in the U. S. shipped 58.3 million tons of cement in 1960 as compared with 61.8 million tons in 1959.

According to an article in *CONTRACTORS AND ENGINEERS* in July, 1960, ("Slip Forms Raised by Pneumatic Jacks"), two large cement plants recently went into production in Hawaii, our latest state. Permanente Cement Co., a Kaiser industry, has a capacity of 1.7 million barrels annually, and the Hawaiian Cement Co., 1 million barrels. Since either plant can practically supply the island's demands, the problem is one of selling, rather than of production.

Chairman appointed for CIMA Road Show

■ Boyd S. Oberlink, vice president of the Allis-Chalmers Mfg. Co., Milwaukee, Wis., has been appointed chairman of the administrative committee for the Construction Equipment Exposition and Road Show scheduled to open February 23, 1963, at the International Amphitheatre, Chicago.

Oberlink has served on the board of directors of the Construction Industry Manufacturers Association and is a past president of the organization. He has also served as a member of the board of directors of the International Road Federation and Associated Equipment Distributors.

The Road Show will be presented

by the CIMA and is sponsored by the American Road Builders Association, the Associated General Contractors of America, the International Road Federation, and the Associated Equipment Distributors.

Rockwell acquires Pushin'-Cushin'

■ Rockwell Mfg. Co. has acquired the assets of Pushin'-Cushin', Inc., of Perry, Kans., maker of a hydraulic shock-absorbing unit for use on Cat D8 and D9 tractors. The Rockwell firm, which has headquarters in Atchison, Kans., will handle all production of the units from its LFM Division plant in Atchison. The Pushin'-Cushin' is designed for use in pusher-scraper operations.

Labor Review

Industry-wide agreement banning strikes promises new era of labor peace

All indications point to a new era of labor peace for the construction industry. The latest and major fact pointing in this direction is that final negotiations started in mid-April between the Associated General Contractors and seven top AFL-

CIO unions on an agreement that would outlaw virtually all strikes (other than jurisdictional, which are handled in long-standing agreements) in the industry.

The new agreement calls first for exhaustion of all existing machinery for settlement of employer-labor disputes. It also sets up a 15-man board as a final resort, with this board's

decisions binding on all parties. Work stoppages are outlawed during the settlement process. The agreement will be implemented in future employer-union contracts.

The pact was approved by AFL-CIO's top command several months ago, as well as by the AGC, which has been working on the proposal for more than two years. Final negotiations began in Washington early in April, and complete union ratification was expected soon.

Put alongside the recent and very similar agreement reached between

the Building Trades and National Constructors' Association, and the long-standing National Joint Board for Settlement of Jurisdictional Disputes, the new agreement provides virtually a blanket assurance for the whole industry—since smaller building-trades unions are expected to go along—that disputes can be handled "in the family" and without resort to strikes and stoppages.

The top developments on labor peace within the industry are only part of the over-all labor news coming out of Washington. Another impor-

International exposition of construction machinery opens in London in June

■ An International Construction Equipment Exhibition opens June 15 on a 25-acre area at the Crystal Palace in London, with exhibits ranging from the smallest of hand and mechanical power tools to the largest earthmoving and road-construction machinery. Exhibits will be restricted to plant, machinery, and equipment; building materials and fittings will not be shown. The show will run daily, excluding Sunday, from 10 a.m. to 6 p.m. and closes June 24 at 5 p.m.

While the bulk of the equipment on display is expected to be British, manufacturers from other countries have been invited to exhibit by the sponsor, Construction Equipment Exhibitions, Ltd., which feels that those attending will want to see a wide selection of equipment and that British machines will be able to hold their own against competition. The invitations and brochures promoting the exhibit emphasize the international flavor of the show, with sections printed in English, German, Spanish, Italian, and French.

The sponsoring company is made up of trade federations representing users as well as manufacturers. They include the Federation of Manufacturers of Construction Equipment, the National Federation of Building Trade Employers, the Federation of Civil Engineering Contractors, and Industrial and Trade Fairs, Inc.

The site of the exposition will provide manufacturers with three different show areas on three levels in the Crystal Palace, adjacent display areas, open-air displays, and two proving grounds where rigs will be put through their paces before spectators in grandstands. Visitors have a choice of transportation to the grounds. Roads lead to the site—and there is parking space available for several thousand cars, ten bus lines serve the area, and a railroad runs within 200 yards of the site.

Information about the exposition, hotel accommodations, or events in London during the exhibition can be secured through International Trade Fairs, Ltd., Commonwealth House, New Oxford St., London, W. C. 1. Because a year is deemed insufficient time for the development of improved models, the next exposition will not be held until the summer of 1963.

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tant development is introduction of legislation in both houses of Congress that would change the basis for prevailing wage determinations by the Labor Department under the Davis-Bacon Act. Under the new legislation, labor would be required to include "fringe benefits" in its considerations.

The wage decisions apply only to contracts in which federal money is involved, but such determinations almost automatically set floors for all other construction jobs. The idea, according to one of the sponsors,

Sen. Thomas Kuchel (R., Calif.), is to force "outside" contractors to meet fringe payments paid by local firms.

Another recent development was introduction of S. 1367—considered to be the bill favored by the Administration—by Oregon's Sen. Wayne Morse to okay common-situs picketing on construction sites. The bill is a repeat of similar legislation by the same senator last session. The chances of passage seem slim.

The narrow defeat in the House of the Administration-backed minimum-wage bill (in favor of a milder

substitute) has brought a new bill (S. 1457) that could have a broader effect on construction contractors than the original. Key wording in the new bill is this: If a firm is in interstate commerce and grosses at least \$350,000 a year, it is put under the minimum-wage laws. That much is the same as the original bill. But the new one provides that if a firm has subsidiaries, and each of these grosses \$200,000 a year, then the parent and each of the subsidiaries would be subject to minimum wages and overtime provisions.

U. S. citizenship held improper requirement for union membership

Dissident members of Laborers Local 89 have been denied a court order permitting them to inspect the union's membership rolls to discover names of members who are not United States citizens. The California superior court for San Diego County held that a union rule that members be U. S. citizens was discriminatory and invalid, hence the disgruntled members had no "proper purpose" for wanting to inspect the records.

It appears from the court's decision that the injunction was requested by a group of members contesting a local election. They maintained that the local's officers allowed non-citizens to vote in violation of the union's constitution. They also alleged that the local officers refused to expel these non-citizens from membership, and that they refused to disclose their names and addresses so that other members of the local could institute expulsion proceedings.

The local, resisting the demand to disclose the names, pointed to its exclusive hiring agreement with area employers and contended that its refusal to refer non-citizens to jobs would be a violation of the nondiscriminatory agreement.

The court agreed with the plaintiffs that union members have the right to inspect union books and records, provided they have a "proper purpose," but it found "proper purpose" wanting in the instant case. The court said:

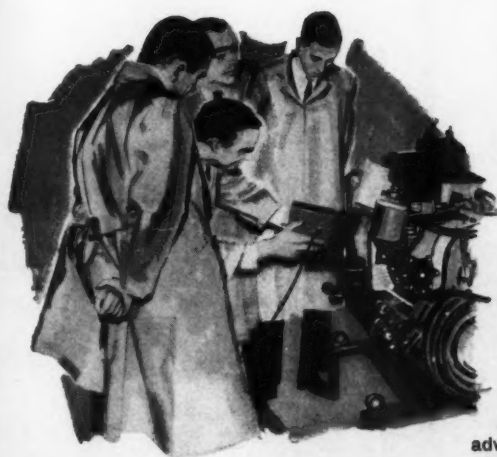
"The fact that a man is or is not a citizen of the United States, or that he might be of Mexican or Spanish birth, or colored or white, is of no materiality. (*Traux v. Raich*, 239 U. S. 33). His membership in the local arises out of the type of work which he does. The collective bargaining agreements as outlined above negate the requirement of citizenship. Anyone, without regard to race, color, creed, or nationality, not only would be capable of doing the work required, but under the agreement is required to do the work."

Portland bricklayers sign one-year agreement with 15-cent increase

Bricklayers in the Portland, Ore., area have accepted the standard 15-cent increase established as the pattern in Northwest negotiations this year, but have applied it to new vacation and promotion funds, rather than to wage rates.

Effective March 1, employers are contributing 10 cents hourly for vacations and 5 cents for a joint union-employer fund for promotion of the brickwork industry.

The bricklayers' hourly rate continues at \$4.07, plus 13 cents for health-welfare and 10 cents for pensions. Other crafts in the area also received an additional 15 cents this year, either as deferred increases previously negotiated or as a result of new agreements. In some agreements, the 15 cents was used to establish pension plans.



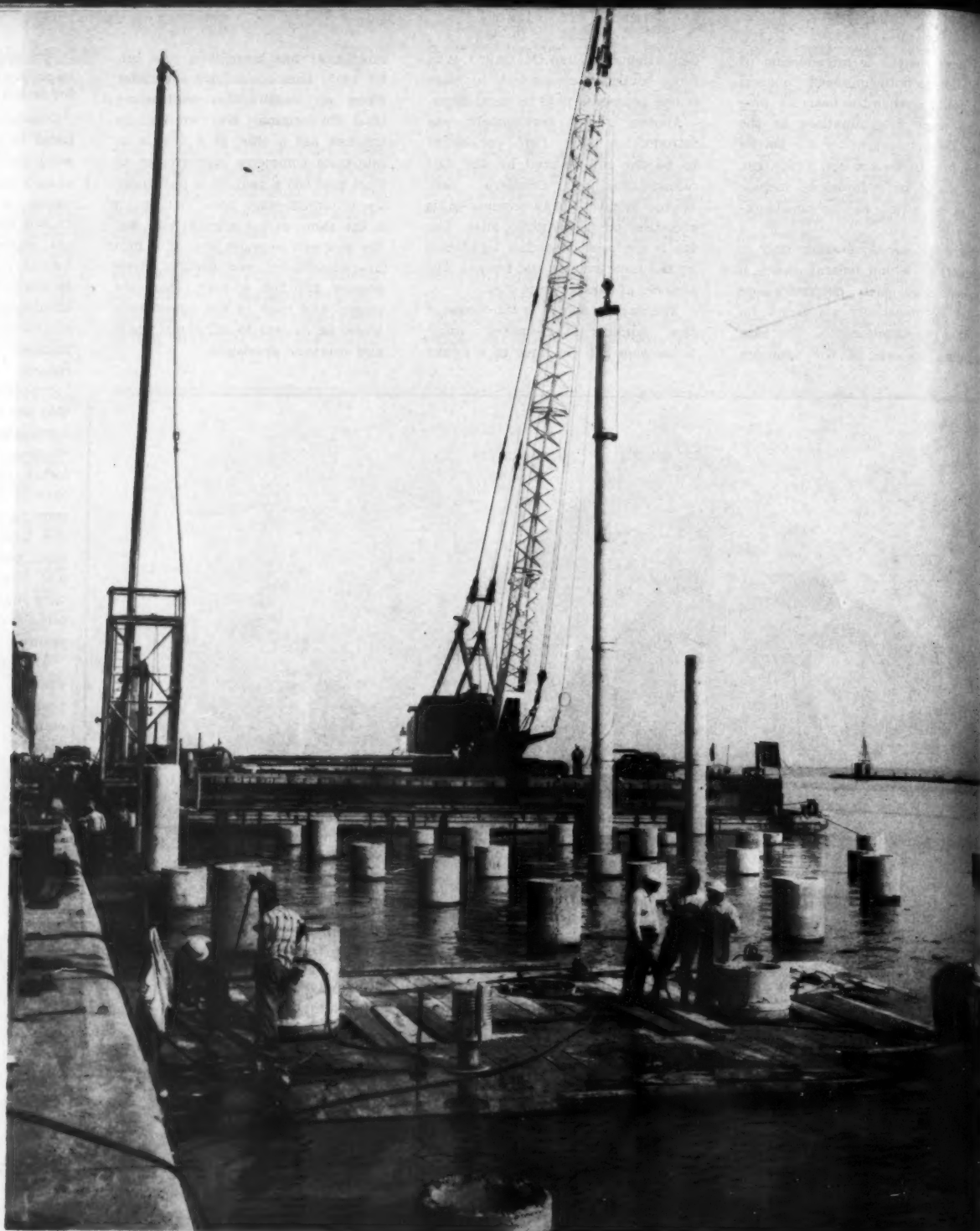
— The American Oil Company representative who calls on you receives special training in servicing industrial and fleet customers at our Sales Engineering School. His training begins with a concentrated course in petroleum product quality and application. According to a planned schedule, he returns for an advanced course and then again for post-graduate work. — From our Marketing Technical Service Department, your American Oil representative draws assistance, when needed, from specialists who are recognized authorities in their fields. These specialists may be called in at any time to work with you on your lubrication problems. More than a thousand research scientists and technicians at our research laboratory support the effort of our representative to serve you. Their mission: To help your American Oil representative help you lower your maintenance costs and stretch your maintenance dollars. — Learn more about American Oil, its men, its service, its products.



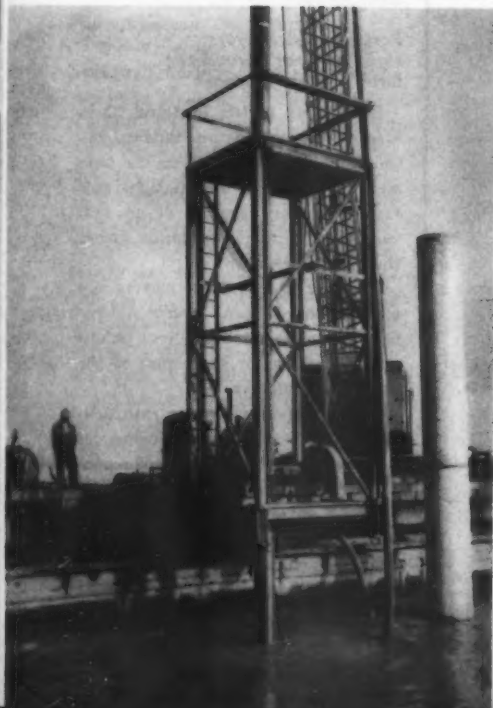
AMERICAN OIL COMPANY
910 S. Michigan Ave., Chicago 80, Ill.

For more facts, use Request Card at page 18 and circle No. 262

On a barge moored alongside the existing Navy Pier in Chicago, a Raymond-designed drill rig and a Manitowoc 3900 that sets prestressed cylinder piles in the drilled holes work on a new addition to the facility. Crews with Thor hammers cut piles off to grade. The pier, with a deck of prestressed plank and cast-in-place concrete, cost \$15.64 per square foot.



(Additional photo on front cover)



Prestressed pier demands new work methods

by BILL ALLEN, field editor

The drill, pulled along the barge on rails by steam tugger hoists, cuts 35-inch-diameter holes into the clay. A Cat D17000 engine rotates the 120-foot-long drill while borings are pumped out through the 14-inch hollow shaft.

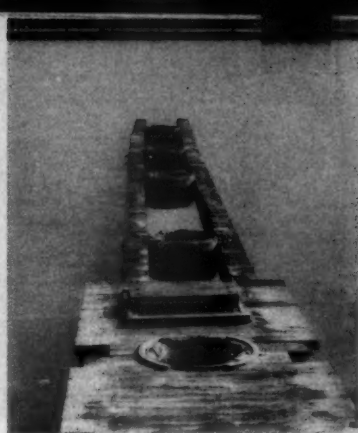
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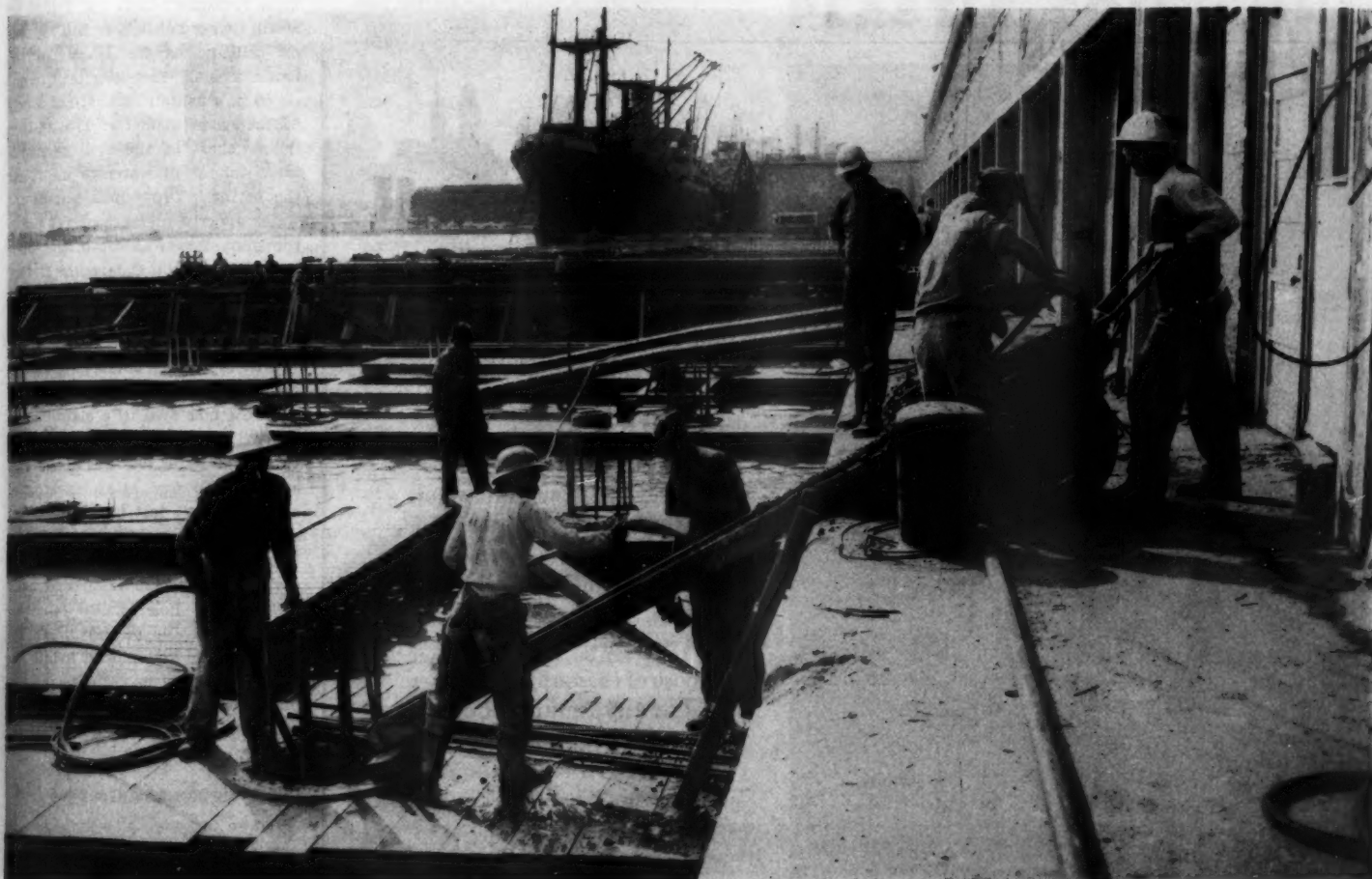
Cylinder piles are cut with Thor air hammers guided by a steel collar. The weight of the hammer is held by the rope attached to a beam straddling the pile wall.



Once concrete has been chipped away, the mesh and prestressed tendons are burned with a torch and the top section of pile topples into the lake.



Two 12 x 14-inch timbers, hung by Superior adjustable hangers stemming from the tops of piles, support the pier-cap form. The bottom form is made of 2 x 12 planks.



The top of a pile, with a cage of reinforcing inserted, is plugged with concrete chuted from a hand buggy. Space restrictions made it necessary to use buggies, which are loaded by transit-mix trucks on the opposite side of the warehouse. A ramp, background, leads out to cap forms further from the pier.

An unusual pier—using prestressed concrete in both the supporting piles and in the deck—is the newest addition to the Navy Pier on Chicago's lakeside. Long cylinder piles of post-tensioned concrete rise to a poured-in-place cap. Spanning the distance between the caps is a deck of prestressed plank and cast-in-place concrete.

The 96 x 1,247-foot addition abuts the Navy Pier on the south side. It was designed by the Bureau of Engineering of Chicago's Department of Public Works, and was built by the North American General Contracting Division of Raymond International, Inc., at a contract price of \$1,873,775. Warehousing and other facilities are now being constructed under a separate contract.

The prestressed design of the pier has several advantages. It is cheap.

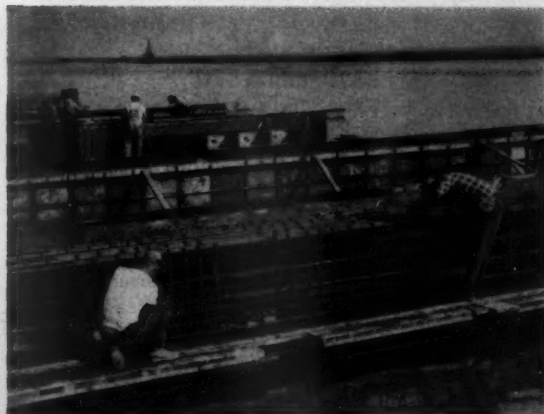
The square-foot cost of the new design is \$15.64.

In preparing bids for this latest addition, contractors were given a choice of using either sub-piers of belled reinforced-concrete caissons or cylinder piles. Three of the five bids submitted were for the cylinder-pile alternate, and Raymond's bid was lowest.

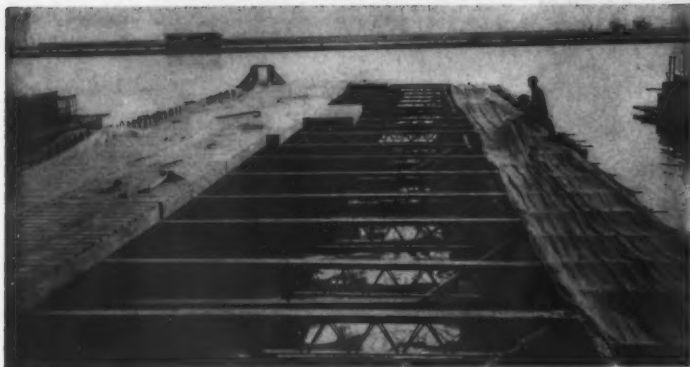
The all-concrete design has the advantages of being both maintenance-free and fireproof. The design also lends itself to speedy construction. It took Raymond only one shipping season, from May through December, to complete its contract.

The new addition consists of 53 bents of prestressed cylinder piles. Each 6-pile bent rises to a cast-in-place cap. The 4-foot-wide prestressed planks of variable depth span

(Continued on next page)



Crews with Ideal reels set steel in the caps, while carpenters, background, form walls of the pier caps with steel-backed Universal plywood panels. Timbers that had been placed between the separate pier caps help brace the walls.



Pecco adjustable bar joists span the distance between cap forms, supporting a walkway for hand buggies used in placing concrete for the cap. The cap on right is curing under burlap kept wet by a perforated garden hose.

(Continued from preceding page)

the 24 feet between caps. The planks are set edge to edge leaving no gaps.

Each of the 80-foot-long, 3-foot-diameter cylinder piles weighs 18.5 tons. The pile is made up of five 16-foot sections that are held tightly together by 8 post-tensioning cables. Each of the 8 cables is threaded through aligned cored holes in the 4½-inch-thick walls of the pipe sections. After being tensioned, the cables are pressure-grouted, creating a homogeneous pile with cables fully bonded to the cylinder walls.

The cylinder piles were trucked individually to the job site from Lock Joint Pipe Co.'s yard in South Beloit, Ill. At a lakeside handling yard near the pier, a crane unloaded the piles.

The piles were then lifted to a barge that was towed to the work area.

Special drill rig

Two test piles were driven and loaded to 345 tons. Net settlement was less than 1 inch under maximum loading. The clay encountered at the site necessitated a combination of predrilling and driving the big piles. For this, Raymond had an ingenious setup. A barge, moored alongside the existing pier, carried both drilling and driving equipment. Winches and cables controlled the position of the barge.

The holes were drilled to a depth of about 70 to 74 feet below water level by a contractor-built rig. Pulled by steam tugger hoists, the drill rig rode on rails across the length of the barge. The 120-foot-long drill terminated in a fishtail bit that cut a hole 35 inches in diameter. The 14-inch hollow shaft of the drill carried a large volume of water to clean out the borings. Two 6-inch pumps fed water under a pressure of 140 psi to the shaft. Power to rotate the shaft was supplied by a Caterpillar D17000 diesel engine. During operation, the drill was raised and lowered by a line from a Manitowoc 3900 crane.

Prior to drilling, boulders and other debris at times had to be cleared from the hole area by a clam bucket. The drill slipped down through about 20 feet of water and began chewing out the hard clay. At an elevation of about 70 to 74 feet below the water surface, the hard clay had sufficient bearing strength to support the piles and the designed superimposed loads.

With the hole drilled, the big Manitowoc crane picked up an 80-foot-long pile and slipped it into the hole. Carried by its own weight, the pile generally dropped into the hole until only about 30 feet was left sticking out of the water.

Big hammer drives piles

Before driving, a 6-inch air-lift pump emptied the inside of the cylinder of water. Then a big Raymond 5/0 single-acting steam hammer drove the pile down to the desired bearing. The 17,500-pound hammer was handled without pile leads by the Manitowoc. With its 39-inch stroke, the hammer delivered 56,875 foot-pounds per blow.

After the piles were driven, their tops were cut off to the grade of the underside of the pile cap. This was accomplished by jackhammers and cutting torches. A steel collar around the pile guided the hammer and insured a clean cut.

Forming the cap

Forming the pier cap was the next step in the construction. Cap forms were supported by two 12 x 14-inch timbers straddling each row of piles. The timbers were hung from the pile tops with Superior adjustable hangers.

Resting on the timbers and forming the bottom of the cap were 2 x 12-inch planks. These also served as a walkway for men casting the T-

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ENGINES

Keep on working after other engines have quit!

"EVERYBODY BUT THE BOOKKEEPER OPERATES IT . . ."
 SAYS: J. L. Pharr, Supervisor Shop No. 3, Dallas County Road Commission, about his Chrysler powered front end loader. "And it's been used for everything from loading pea gravel to hauling 48" concrete pipe. Yet it's never failed to meet a work day schedule in eight years. In fact, on any equipment we operate we've never had a Chrysler engine fail."

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MARINE AND INDUSTRIAL ENGINE DIVISION
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foot reinforced-concrete plug with protruding dowel steel in the top of each pile. After the plugs were cast, men formed the walls of the cap with Universal panels and set the reinforcing steel.

Concrete handling

In the early stages of construction, transit-mix trucks drove out onto the existing pier to get as close as possible to the construction. From this point, hand buggies carried the concrete to the forms.

For the casting of the pier caps, walkways were set on Pecco adjustable bar joists. These spanned the distance between the forms of two neighboring caps.

With the bents completed, a select fill was placed in the area beneath the new addition. The 53,000 cubic yards of gravel was carried in the holds of large freighters, and each ship used a long swinging conveyor arm to place the material between the bents. The fill reduced the depth of water beneath the pier to about 10 feet. The depth of the water in front of the new pier will be 27 feet—the Great Lakes' maximum dredged depth.

Consumers Co. of Chicago produced the 24-foot-long prestressed planks that formed the deck of the pier. A traveling derrick, working on the previously laid deck, unloaded the trucks and set the planks. The planks were then covered with 6 inches of cast-in-place, reinforced concrete.

Personnel

For the city of Chicago, Dick Van Gorp is chief engineer. J. Walter Grimm is assistant chief engineer in charge of construction, and George Eng is the resident engineer.

For Raymond, William Healey was project manager, C. R. "Red" Williams was superintendent, and James J. Keating was project engineer.

THE END

Civil engineering tour

The Editor

CONTRACTORS AND ENGINEERS

I read with great interest the article "New Techniques Help Reclaim Land in Holland" in the April issue.

For those C&E readers who are interested in seeing the Delta Works at Zeeland in all stages of construction, and in seeing construction and engineering works and institutes in Portugal, Spain, Italy, the Soviet Union, Norway, England, and France, there will be a 36-day civil engineering tour in July and August, to be guided by Hal Hunt and myself. Information is obtainable from Study Abroad, 250 W. 57th St., New York 19, N. Y.

M. D. Morris, F. ASCE

New Goodrich department

The B. F. Goodrich Co., Akron, Ohio, has established a corporate department of market planning to serve all of the company's divisions.

Gerard Alexander has been named by Goodrich to the new post of director of market planning.

MAY, 1961



CUT FORMING COSTS

..... with the Versatile

SUPERIOR COIL TIE SYSTEM

NOW Featuring the

NEW "BOND-FREE" PLASTIC COIL CONE




Cannot adhere to concrete! Instant cone removal. Made of tough plastic designed for long life. Distinctive red color. Smaller cone—O.D. only 1 1/4".

The various types of ties, working parts, and tools which comprise the modern SUPERIOR Coil Tie System provide the speediest, safest, most versatile concrete forming method available today! Any form, no matter how complex or unexpected its nature, can be economically tied using one or more of the SUPERIOR Coil devices. Form erection crews can maintain fast schedules because simplicity and adaptability are built-in. Only the coil tie is expendable... all working parts are returnable for credit. The Cone-Fast Coil Tie now features the plastic "Bond-Free" Coil Cone which threads onto the extended coil of the coil tie as shown above. Cones cannot be knocked off and units can be bench assembled, if desired.

The versatility of this system is shown in a new 6 page bulletin, now available...

Request a copy of BULLETIN CTS-1



SUPERIOR Concrete Accessories, Inc.

9301 King St., Franklin Park, Ill. (A Suburb of Chicago)

New York Office
39-01 Main St., Flushing 54, N. Y.

Houston Office
4101 San Jacinto, Houston 4, Tex.

Pacific Coast Office and Plant
2100 Williams St., San Leandro, Calif.

For more facts, use Request Card at page 18 and circle No. 264

Symons appointment

■ Symons Clamp & Mfg. Co., Chicago, Ill., has named Vernon Schimmel western regional sales manager with headquarters in San Francisco. He has been with Symons since 1949.

GMC division appointment

■ Norman F. Trost has been named assistant director of reliability for the GMC Truck and Coach Division, General Motors Corp., Pontiac, Mich. For the past four years, Trost has been general manager of an aircraft supplier plant, Narmco Mfg. Division of Narmco Industries, Inc., San Diego, Calif. Previous to that, he spent 15 years with the Aeroproducts Division of General Motors at Dayton, Ohio.

Lincoln Electric names general sales manager

■ The Lincoln Electric Co., Cleveland, Ohio, has appointed A. F. Boucher general sales manager.

Boucher, who joined the company in 1936, was promoted to his new post from that of assistant general sales manager. He succeeds J. S. Roscoe, who will devote full time to special market development assignments.

Limestone group cites Farrar of Cyanamid

■ E. C. Farrar, assistant to the manager of the explosives and mining-chemicals department of American Cyanamid Co., Bound Brook, N. J., was awarded a plaque by the National

Limestone Institute in recognition of his distinguished service as chairman of the Manufacturer's Division for 1954-55.

Farrar was instrumental in founding the division in 1954, served as its first chairman, and was a director of both NLI and the division from 1954 through 1957.

New sales representative named by L. B. Foster

■ Jack McAninch has been named sales representative in the Houston, Texas, office of the L. B. Foster Co., Pittsburgh, Pa., supplier of steel-sheet piling, pipe, aluminum bridge railing, and allied products.

McAninch was formerly employed by the Sheffield Division of Armco Steel Corp.

Man and Machine charts



by **GEORGE E. DEATHERAGE, P. E.**
construction consultant

Process charts, previously described in these management articles, may be used to predetermine or check the production methods of a crew consisting of combinations of men and machines. They can also be used to establish production time or the efficiency of one specific machine under

known or assumed conditions. To do this, the actual working time, idle time, and the percentage of effective utilization must be known.

For instance, on a dirt-moving job, it may be necessary to know the production from a scraper-loader unit for cost-estimating purposes, or to check the actual production of the unit in the field for cost-control purposes and as a basis for future estimating. The same data might be

required for a paver or other key machine.

Each year, construction machinery becomes larger, of greater capacity, and more expensive. A unit costing \$30,000 means a total ownership operating cost of hundreds of dollars per shift, so that minutes lost in idle time or in reduced operating efficiency are key factors in the profit-making cycle.

Factors of operating efficiency

In scraper-loader operation, the output depends on factors such as the nature of the material to be loaded, rim pull, rolling resistance, haul distance, adverse or favorable grade, efficiency of the operator, gear ratios, and selection.

Even the old-time dirt mover must admit that it is beyond human capability, by merely looking at one of these large ultramodern machines, to consider all the variable factors, apply them to the job at hand, and come up with anything more than a guess for machine output. If earth-moving is to become more efficient, the guesswork must be, as far as possible, eliminated.

This means reducing all factors to measured values that can be set down on paper, analyzed, and totaled. This is easily done by the use of Man and Machine charts, like that in Figure 1.

Chart eliminates guesswork

In order to make the chart as versatile as possible, the vertical column headings have several subject indications, so that the one not applicable to the case at hand may be crossed out. The left-hand vertical column carries the usual industrial engineering symbols for an operation, transportation, storage or delay, and inspection or an approval. A triangle indicates a delay, so that a glance at the completed chart will indicate where time is lost and production suffers.

In the chart example in Figure 1—that of a scraper-loader—the first four entries total a complete work cycle: loading, transporting, unloading, returning empty and ready to load again. This cycle is repeated many times. Minutes and fractions of a minute gained or lost are all important and controlling factors of production efficiency.

In estimating production from the scraper-loader, it is necessary to estimate the time required for each one of the components making up the work cycle, or trips, and then total them to get the time per cycle or trip. From this a theoretical number of trips per shift, the yardage moved, and the cost per yard can be determined. If production in the field is being charted, the time taken for each move is clocked.

Estimating the time required for

CONTRACTORS AND ENGINEERS



A question every sewer contractor should ask himself:

**why slice...why chop
when you can DIG
like this!**

Put any conventional-type backhoe to work in shale, hardpan or frost, and what happens? As any operator knows, the boom tends to ride up during inhaul. You end up with partially-filled dippers. Or you resort to chopping to get a full bite. Much the same thing happens on deep trenching. The deeper you go, the less force you have at dipper teeth. Again, yardage output suffers.

These slow-downs in tough materials or deep digging apply to the best of conventional-type backhoes... regardless of claims you may hear. You've lived with these conditions because you had to. But no more! AMERICAN'S POSITIVE-PRESSURE backhoe now gives you fast, profitable production in the very toughest going. Simplified diagram below shows you how it's accomplished. With POSITIVE-PRESSURE, boom can't ride up during inhaul... with the result that you get up to 300% more penetration force behind dipper teeth.

For all its advantages, the POSITIVE-PRESSURE system is remarkably simple and trouble free. No pumps, no powered mechanisms of any kind. Fully automatic. Let us tell you all about it... NOW!

B-728

WITH AMERICAN'S EXCLUSIVE POSITIVE-PRESSURE BACKHOE you utilize almost entire weight of machine to penetrate hardpan, shale or deep frost. Boom can't ride up during inhaul. You eliminate chopping... reduce caving... save wear and tear. You increase output in easy materials too... get bonus yardage... especially on deep trenching.



AMERICAN
AMERICAN HOIST
and DERRICK COMPANY
ST. PAUL 7, MINNESOTA

For more facts, use Request Card at page 18 and circle No. 265

Figure 1

MAN AND MACHINE CHART

Date _____ Chart No. _____
 Subject _____ Location _____
 Cost No. _____ Cost Code _____ Charted by _____ Mach. No. _____
 Oper. Rate _____ Helper rate _____ Truck rate _____ Pusher rate _____
 Machine description _____ Capacity _____
 What is done _____
 Old Method _____ New Method _____ Proposed _____ Unit _____ Cost _____

CHART SYMBOL	Operator	Machine	Time	Pusher/Scrub	Time	Distance/Haul	Remarks	Feet	Time
○	Run Mach.	2.0	Load, turn, accel.	2.0	Clay/loam/dry	205			
○	Run Mach.	1.5	Travel/Loaded	1.5	0% grade	1600			
○	Run Mach.	1.25	Spread/turn/accel.	1.25	Tight turn				

* Time in minutes.

SUMMARY

	Operator	Machine	Trips	Haul/Dist.
Idle Time				
Working Time				
Total cycle time				
Utilization in percent				Cost

Mack Trucks reorganizes national sales setup

■ Mack Trucks, Inc., Plainfield, N. J., has streamlined its national sales organization around two key changes in field operations.

All branches will now report directly to the home office and will be supported in the field by six regional managers.

The company's larger distributors will be under the direct supervision of 13 zone sales managers, who will report to Carl K. Revelle, now manager of the Distributor Sales Division headquartered in Plainfield. E. H. Dillow will head the newly formed Branch Sales Division, supervising activities of all Mack branches. Wallace Hallam has been named manager of field operations for the company.

any specific scraper-loader to perform each of the steps in a work cycle in order to arrive at the number of trips per hour and yardage output for different classes of material, under all the factors noted, is not in a mathematical sense a difficult chore. Knowledge of simple arithmetic is sufficient.

However, the process does require thought, time, and application. The decision of whether or not to use the charting process boils down to whether or not the size of the job warrants it, and whether or not one will be satisfied with a "guesstimate" on production.

Guesstimate can be reduced to a minimum, and the use of the Man and Machine charts presents a system wherein the labor of making the mathematical analysis is reduced to a minimum.

Thor begins operation of Italian company

■ Thor Power Tool Co., Aurora, Ill., has begun operation of FIAP (Fabbrica Italiana Apparecchi Pneumatici), a Turin, Italy, firm which it recently purchased. Both companies produce pneumatic tools for the industrial and construction markets.

Samuel P. Gartland, formerly Thor sales manager in the U. S. midwestern industrial market, will become managing director of FIAP. The staff of the Italian firm will remain intact. To bring about immediate interchange of ideas and methods, and to implement FIAP production with Thor-engineered designs, teams of technicians from both companies will be sent on exchange visits to plants.

Flygt sales manager

■ Joseph Albiez has been appointed sales manager of the Flygt Corp., Hoosick Falls, N. Y. He formerly was general sales manager of the South Bend Division of Curtiss-Wright Corp.

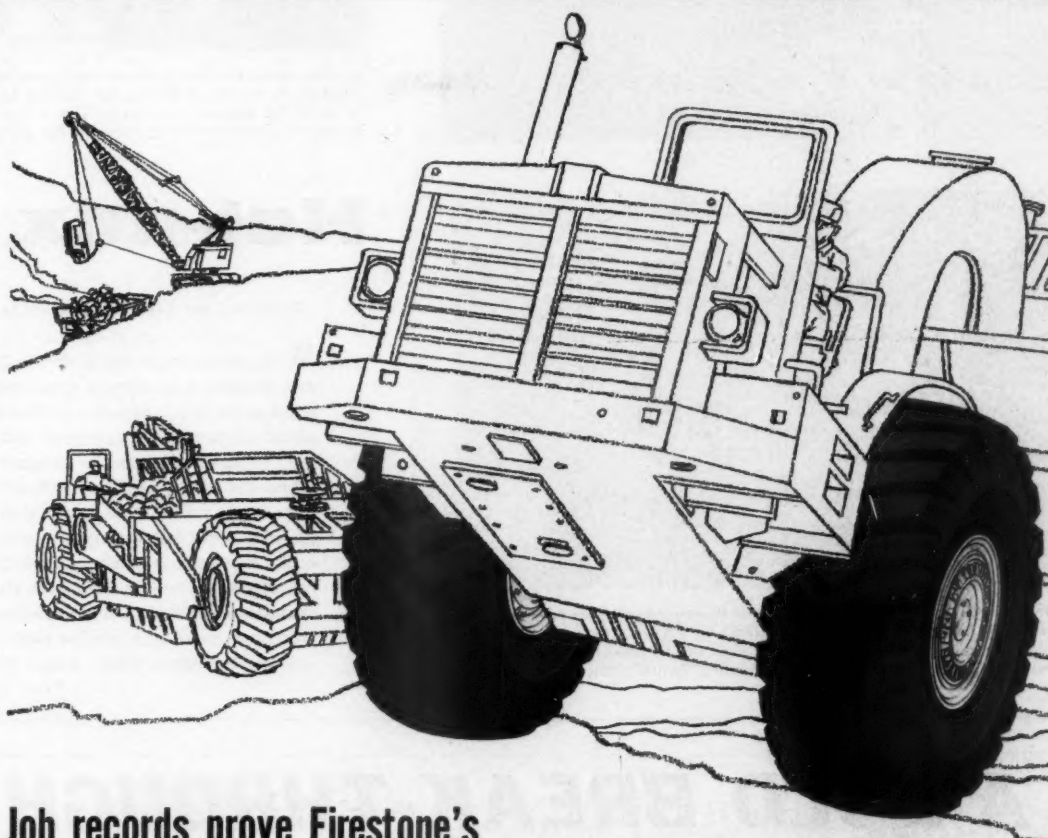
Airplaco expands

■ Air Placement Equipment Co., Kansas City, Mo., is now operating from a new office and expanded manufacturing facilities at 1000 W. 25th St.

The new building connects directly with the company's fabrication plant and machine shops. By joining the old office building to the plant, 5,000 square feet of additional working space was gained.

L-W appointment

■ LeTourneau-Westinghouse Co., Peoria, Ill., has appointed George D. Leigh product manager, trucks. For the past 10 years, Leigh has been with Utah Construction & Mining Co.



Job records prove Firestone's

BIG TIRE TEAM KEEPS PRODUCTION UP!

1. Firestone Giant Tires keep equipment working to keep production up! You get more work out of ROCK GRIP EXCAVATOR* tires because far more strength is built into them. Shock-Fortified, bonus-ply nylon cord body, teamed with tough cut-resistant Firestone Rubber-X, gives greater staying power to take the worry out of low bids.
2. Firestone Giant Tire Service: A Tire Specialist with a completely equipped service truck is on the job to ease deadline pressure, with round-the-clock maintenance for every tire on the project. Put him on the job, and watch your downtime take a dive!

Team up with Firestone cost-cutting Giant Tires and Giant Tire Service. See your Firestone Dealer or Store. Or write: Manager, Off-The-Highway Tires, The Firestone Tire & Rubber Company, Akron, Ohio.

*Firestone T.M.

Always Specify Firestone Tires When Ordering New Equipment.

Firestone

FIRST IN OFF-THE-HIGHWAY TIRE NEEDS

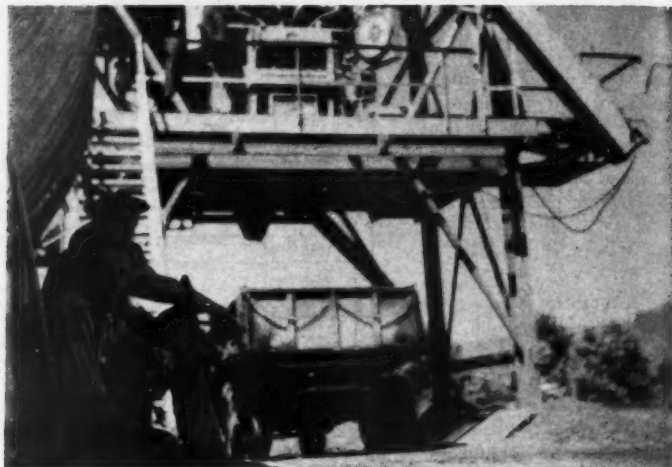
Copyright 1961, The Firestone Tire & Rubber Company

Tune in Eyewitness to History every Friday evening, CBS Television Network

For more facts, use Request Card at page 18 and circle No. 267



A completely automatic all-electric Cedarapids G 40 that can be set to produce either of two mixes supplies a paving job near Dodson, Ore. A White COE truck with Schetky trailer loads under the mixer. A Cat D337 generator on another truck supplies auxiliary power.



Plant foreman Kenneth E. Harten and, behind him, plant operator H. Picard grab some shade by one of the asphalt storage tanks while the plant turns out the mix by itself. The operator sets controls for a mix and number of batches, and when a truck pulls under the plant, he starts the cycle. The rest is automatic.



The 72-inch X 30-foot dryer is fed by a conveyor that, in turn, is fed by a recovery belt running under stockpiles. In the foreground are the hot elevator, dust collector, and storage tanks. Feeders and recovery belts are remotely controlled from the plant's central control station.

Hot-mix produce

Contractors and Engineers staff article

While the operator sits in the shade and watches, a completely automatic Cedarapids G 40 bituminous mixing plant weighs out the aggregates, adds the required amount of asphalt, mixes the batch, and dumps it into the waiting truck. When it has completed a previously determined number of batches, it automatically shuts off and waits for a signal from the operator indicating that another truck is in position to get its load.

This all-electric plant, owned by

Dorman Construction Co., Vancouver, Wash., will, at the flick of a switch, produce either of two mixes set up in advance. The automatic controls can be set for any number of consecutive batches required to load the trucks. On this job, the truck-trailer rigs were hauling 17½-ton legal highway loads, which took seven of the plant's 5,000-pound batches.

A recent job for the plant was a 4-mile section of Interstate 80N (U. S. 30) from Multnomah Falls to Dodson, Ore., a section of the scenic Columbia River Highway about 30

A BOLD BREAK-THROUGH

in self-priming contractor pumps

NEW 5 & 7 SERIES SPC'S

Barnes new 1½" and 2" self-priming centrifugal pumps represent the greatest advance in hydraulic design in over twenty years! They offer TEN new operating and servicing features that can mean substantially more efficiency on all your pumping jobs. Outmodes every other pump in its class—with an unmatched combination of years ahead engineering achievements.

PRIMES IN JUST 16 SECONDS

PEAK OPERATING PERFORMANCES

EASIER AND FASTER SERVICING

PORTABLE WEIGHT • RUGGED DESIGN

33,000 TO ONE ECONOMY



Available in gasoline-electric-universal drive models. Engine-driven models come equipped with discharge priming tee, strainer and nipple for suction hose. Wheel kits available as option.



FREE LITERATURE

You owe it to yourself, your company and your customers to get complete information on Barnes' sensational new SPC pumps. Our descriptive literature contains comprehensive specifications, performance curves and other vital details. Write today...it could be the most profitable idea of the year.



New All-Weather Cab for Models 922, 944, and 966 CATERPILLAR TRAXCAVATORS

- Made of heavy gauge sheet steel and angle iron frame.
- Full vision SAFETY GLASS windows, mounted in rubber—rear window slides open for ventilation.
- Full size hinged doors on both sides, easily removed for summer operation.
- Windshield wiper, heater-defroster, sun visor and rear view mirror (optional).

See your Caterpillar distributor or write: **CAMPBELL DETACHABLE CAB CO. WAUCONDA, ILLINOIS**

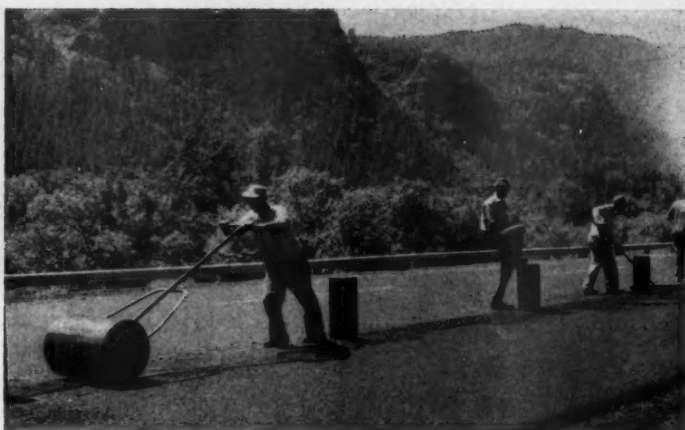
For more facts, circle No. 269

CONTRACTORS AND ENGINEERS

For more facts, use Request Card at page 18 and circle No. 268



This hinged spreader attachment on the Barber-Greene paver pushes hot-mix between the posts. When it hits a post, it folds back to pass; then a long spring brings it into position again.



Since it was uneconomical to work big rollers between the posts, this area was compacted by hand. The man at far right rakes out the hot-mix behind the paver. The next man in line tamps the material close to a post with a steel tamper. Finally, a man goes over the area with a hand roller.



Traffic is carried through the job while a Barber-Greene H79A paver picks up a load of hot-mix from a Schetky dump trailer. A Buffalo-Springfield 3-axle tandem handles breakdown rolling.

Ceoy push button

Vancouver, of a switch, es set up ic controls er of con- to load the truck-trailer -ton legal k seven of tches. ant was a ate 80N h Falls to the scenic about 30

miles east of Portland. The \$480,-154.84 contract included some grading and drainage, 8 inches of crushed-rock base, 52,000 linear feet of guard-rail, and the 37,500 tons of asphaltic concrete in two 2-inch courses.

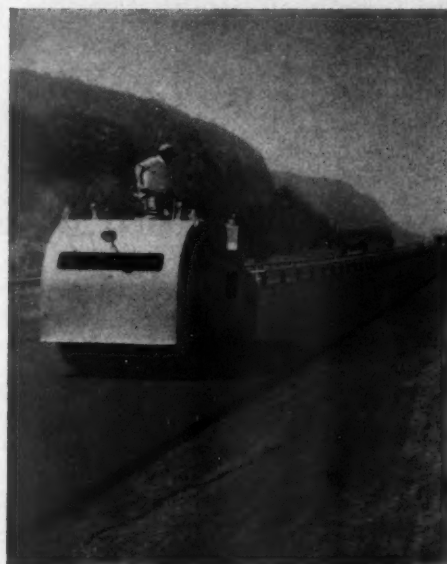
Sheriff Reserves handle traffic

The project transforms the old 2-lane highway into a 4-lane interstate section. Traffic was carried through the job continuously on one roadway or the other, as there were no available detours. This required an intricate phasing program, lots of barriers

and warning signs, and an efficient job of traffic control.

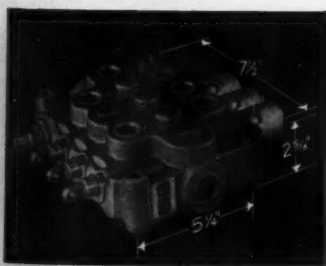
For flagmen, the contractor hired four men who are enrolled as Sheriff Reserves and have had police training, including handling of traffic. These men wore the green uniform and badges of the Sheriff Reserves, which helped command attention and respect from drivers. Their knowledge of traffic control was of great assistance in handling the heavy traffic flow with safety and a minimum of inconvenience to the construction.

(Continued on page 34)



Finish rolling of one course of pavement is done by an Austin-Western 10-ton tandem.

Need up to 23 G.P.M.
in Fluid Control?



COMPACT HUSCO 3300-SP MULTI-PLUNGER VALVE IS FOR YOU!

One of five basic sizes, HUSCO 3300-SP Valve offers unusual design and performance features that adapt it to wide application. Available to control up to six individual cylinders, single or double acting, permitting up to four positions of control for extreme versatility. Conventional or parallel circuit, check valve controlled. Compact, precision built for long, trouble-free service. Other HUSCO Multi-Plunger Valves in capacities from 3 to 185 G.P.M.

Write for detailed specifications on HUSCO 3300-SP and complete catalog "Husco's House of Ideas" — or engineering aid on your hydraulic control needs.



HYDRAULIC UNIT SPECIALTIES CO.

PUMPS • VALVES • CYLINDERS
P. O. Box 256-B, Waukesha, Wisconsin

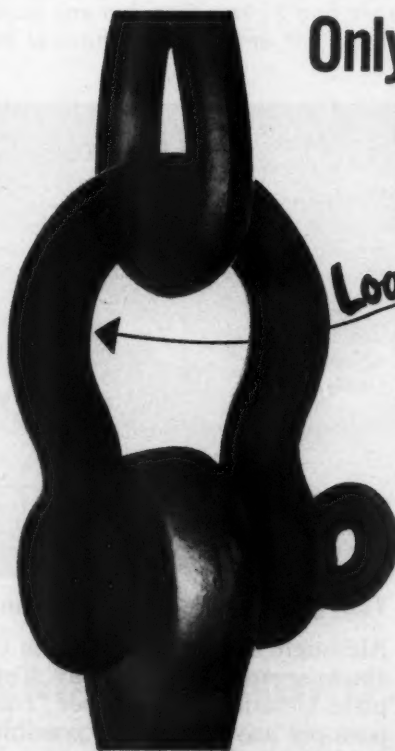
West Coast Representatives
EASTMAN PACIFIC CO., Los Angeles, Calif.
ROY BOBBS AIR-DRAULIC CO., Portland, Ore.

For more facts, circle No. 270

Only Crosby-Laughlin shackles

say what they do
do what they say

Load-Rated®



Guaranteed safe lifting capacity is permanently forged on every Crosby-Laughlin shackle. Size for size, they're fully 50% stronger than other makes!

Look for the RED color — mark of genuine Crosby-Laughlin quality.

CL-952



Free catalog gives application data for 2000 types and sizes of forged fittings for wire rope and chain. Ask your distributor for your copy.

CROSBY LAUGHLIN
FT. WAYNE, INDIANA

Division of
AMERICAN
HOIST

For more facts, use Request Card at page 18 and circle No. 271

Move 2 loads per trip a

Here's the best way ever developed to cut *earth-moving costs*. Operate *two* scrapers behind a Tournapull® or Speedpull® prime-mover. Net result: You get 100% more capacity than a single scraper at only about $\frac{1}{3}$ extra cost!

Only LeTourneau-Westinghouse offers you a *practical tandem*, in a selection of *practical size-ranges*. Making the "breakthrough" possible is the famed LW electric control system, that sends working-power any distance, simply, efficiently. Consider how LW Tandems can put *you* in a more favorable position on the jobs you bid...help you make more profit on the jobs you take.

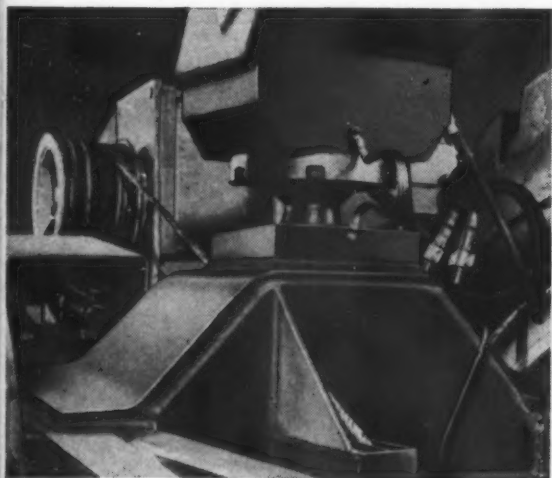


You save three ways with LW Tandem scrapers:

LOWER ORIGINAL INVESTMENT: To double your load capacity you pay only for a second scraper, plus incidental hitch and installation cost. You save the price of the second prime-mover!

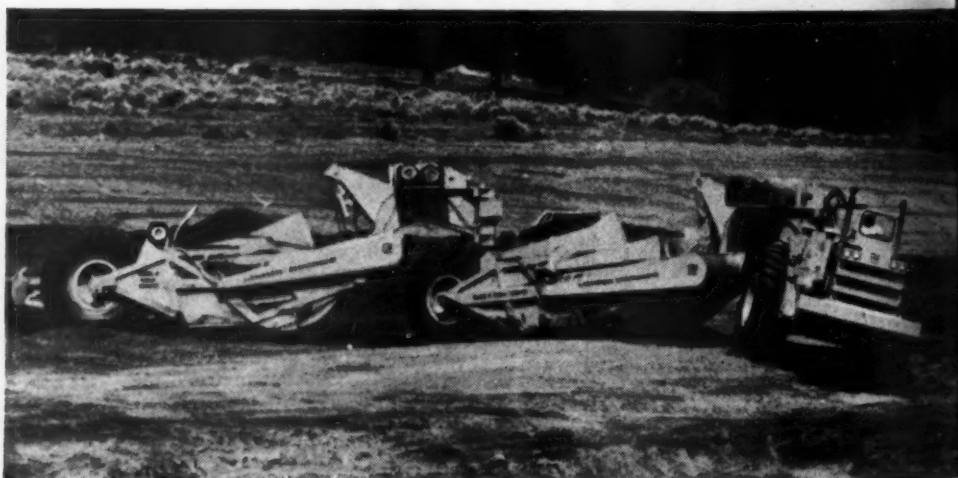
REDUCED OPERATING COSTS: Your only extra operating cost for the double-capacity LW Tandem scrapers is for a slight additional amount of fuel per shift. (One operator handles both scrapers.)

LESS MAINTENANCE: Upkeep for a single scraper and for LW Tandems are within pennies-per-hour of each other! There's the nominal maintenance cost of the additional scraper and its two tires, but you have no extra engine, transmission, or any other mechanical component to maintain!



Here's the hitch that doubles your capacity

Front scraper is joined to rear scraper by this ball-and-socket swivel hitch. Hitch base is welded to reinforced push-block frame of front scraper. Rear scraper's electric leads "plug in" to jacks on front scraper.



You get "single-scraper" maneuverability

Although an LW Tandem is considerably longer than a single scraper it needs only 10 to 15% more space for complete U-turn. Rear scraper "tracks" front scraper. You can perform any maneuver possible with single scrapers. No tendency to jackknife.

p at only $\frac{1}{3}$ extra cost



You enjoy these *OPERATING* advantages, too:

NO SUPER-PUSHER NEEDED:

Your pusher loads only one of the tandem scrapers at a time, so you don't need "super" pushers or tandem-pushers. You save pusher positioning time, too.

LESS HAUL-ROAD TRAFFIC:

Tandem scrapers are no higher, no wider, than singles and can use any normal haul-road. You have fewer machines moving about, for less congestion, fewer delays. In addition, tests show that ton-for-ton, tandems punish haul roads less than single scrapers of equal capacity.

MORE ADAPTABILITY:

With LW Tandems you can meet changing job conditions, by hitching or unhitching the "extra" scraper in a matter of minutes. And you can still interchange your basic scraper for a 'Pull' Rear-Dump, as always!



"Electrics" make it possible, practical

These buttons operate bowl lift, apron, and tailgate... left row for rear scraper, right row for front scraper. LW "Electrics", with power transmitted to points of action, is the MAIN reason why only LW can give you a *practical* tandem scraper.

Choose from 18 to 58 cu yd capacity

You get extra tandem profits with *any* LW electric 'Pull' prime-mover, 143 to 430 hp. Remember, too, your LeTourneau-Westinghouse Distributor can convert your *present* 'Pulls' to tandem operation. He can also give you reliable engineering data that will show you on what job conditions you'll make *most* money with LW Tandems. Visit your LW Distributor *soon*.

*Trademark TP-2409-DC-2



LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

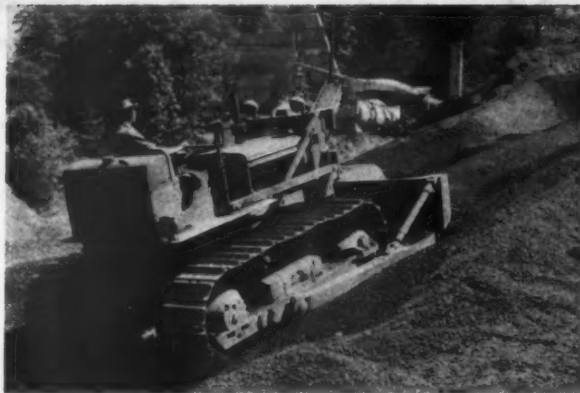
For more facts, use Request Card at page 18 and circle No. 272

(Continued from page 31)

These men are not regularly employed peace officers working for the contractor during their time off. They are civilian workmen who have taken the Sheriff Reserve training program and are enrolled to assist the regular peace officers in times of emergency.

Rock base and leveling course

Where the roadway is on a new grade, Dorman placed a 6-inch course of 2-inch crushed-rock subbase and a 2-inch lift of ¾-inch crushed-rock base over the grading section. Where the new road lies on the old grade, a crushed-rock leveling course was placed where necessary to correct the grade and section to the interstate standards.



An International TD-14 tractor-dozor feeds aggregates from stockpiles to the traps of the recovery tunnel.



Inside the 7-foot-diameter Armco pipe tunnel, two Syntron feeders deliver the rock to a recovery belt leading to the belt that feeds the dryer.

Crushed rock for the several base courses as well as for the bituminous paving was produced from a quarry beside the road near one end of the project. Here Dorman set up a crushing and screening plant consisting of a Cedarapids apron feeder, primary jaw crusher, and first-stage screen, followed by a pair of Symons cone crushers and two sets of Cedarapids roll crushers. The plant was fed by Cat D8 and D9 tractor-dozers. Some of the base material went directly to the road from the crushers while the

remainder went into stockpile.

Coming out of the stockpile, the base material rode a conveyor to a 20-yard elevated loading bin. The contractor devised an automatic shut-off to stop this conveyor when the bin was full. Drivers hauling base rock pulled in under the bin and operated the loading gates from the truck cabs.

On the road, the base materials were spread from the bottom-dump truck-trailers, watered, mixed, and shaped by motor graders, then rolled with steel-wheel and rubber-tire roll-

ers. The finished base was primed with an application of 0.35 gallon per square yard of RC-3 cutback asphalt.

Throughout most of the length of this job, the paved roadway is 68 feet wide with a median barrier down the center. This barrier consists of 8 x 8 creosoted wood posts at 12.5-foot centers flanked on both sides by metal guardrail. On each side of the median barrier, the paving section consists of an 8-foot paved median, a 12-foot inside travel lane, and a 14-foot outside travel lane. Outside of the paved sec-

This is the Shore Used in Forming These Buildings...

With Economical ELLIS METHODS!

United States Senate Office Building
Washington, D. C.

United States House of Representatives
Washington, D. C.

Smithsonian Institute
Washington, D. C.

Olympic Stadium
Washington, D. C.

Kaiser Building
Oakland, Calif.

Miami Herald
Miami Beach, Fla.

Firestone Office & Warehouse Building
Nashville, Tenn.

Southwestern Bell Telephone Addition
Dallas, Texas

Chemistry Building
U. of Texas, Austin, Tex.

Public Health Building
Philadelphia, Pa.

Carnegie Institute of Technology
Philadelphia, Pa.

Municipal Auditorium
Pittsburgh, Pa.

ELLIS SHORE—

"up and down" faster, easily adjusted, safe, and economical! Send plans on your next job for free suggestions.

Ellis
MFG. CO.
INCORPORATED
211 N. W. 4th St.
OKLAHOMA CITY, OKLA.

For more facts, circle No. 273

This material hoist makes money for you!

TOW...

FLIP!...

Sasgen SELF-ERECTING LIFTAMATIC HOIST

...IT'S BRACED, READY FOR WORK!

SETUP IN 2½ MINUTES—A ONE-MAN JOB!

This is the hoist that goes where you go, does what you want it to do—safely and dependably, built for heavy-duty service. Can be disassembled and shipped anywhere by common carrier.

Aluminum rails telescope, provide unloading heights from 13 to 40 feet. Has 7½ hp. gasoline engine and centrifugal-type governing downbrake (1000 lb. capacity) having 125 fpm. line speed. Remote control and adjustable limit stops standard. Side-loading platform is 34 x 60 inches to handle most loads. Also with reversible electric motor (500 lb. capacity). Write now for details—immediate delivery.

Sasgen DERRICK COMPANY
MANUFACTURERS OF EQUIPMENT FOR THE CONSTRUCTION INDUSTRY

For more facts, use Request Card at page 18 and circle No. 274

A POWER PACKED PROFIT PRODUCER SPEICHER'S *tandem* traction TRENCHER



THE ONLY HEAVY DUTY TRENCHER ON RUBBER TIED WHEELS... WILL TURN IN 24' RADIUS

For real ditching mobility and versatility, a SPEICHER tandem traction trencher can't be beat. Big or small jobs, near or far, you can drive this trencher to location at speeds up to 30 M.P.H. No time consuming loading on semi. Cuts up to 6 ft. depth, from 12 to



Side mounted controls are at operator's fingertips. Permits operation from standing or sitting position, on or off the platform.

24 inches, with a digging speed of one to thirty feet per minute. Exclusive weight shifter lets you shift weight from front to back or from back to front at will. Low cost maintenance—long life. Write today for descriptive literature—we'll let the facts sell this trencher.

Dealer Inquiries Invited

Write, Phone or Wire

ANCHOR SALES CORPORATION

1109 Shimp Drive, Celina, Ohio

For more facts, use Request Card at page 18 and circle No. 275

CONTRACTORS AND ENGINEERS

tion, there are 8-foot stabilized crushed-rock shoulders surfaced with a triple penetration treatment using 180 to 200-penetration asphalt and rock graded from 1 1/4 inches down.

The 52,000 linear feet of guardrail on the project, which included the continuous median barrier, was furnished and installed by a subcontractor that had just completed the installation of 175,000 linear feet of similar guardrail on an adjoining project. The wood posts for the median barrier were set in drilled holes in advance of the paving. The metal guardrail was attached after the general contractor had completed the paving of the median area.

Under this arrangement, the paving contractor had to spread and compact the hot-mix around and between the posts. Dorman fitted one of the Barber-Greene pavers with a spring-loaded hinged strike-off shoe extending out about 16 inches and located just behind the auger. As the auger pushed an excess of material out to that side, the strike-off spread it to grade between the posts. When the strike-off hit one of the posts, it simply folded back to pass, and was pulled into position again by the springs as the paver moved ahead.

A small amount of hand raking shaped this material to grade. A workman with a steel hand tamper tamped thoroughly around each post, and another workman with a small hand-propelled roller worked the area between the posts.

All the rest of the bituminous paving was laid in a conventional manner using two Barber-Greene HT9A pavers, which were fed by a fleet of White 3000 trucks pulling Schetky dump trailers. A Buffalo-Springfield 3-axle tandem roller (18 tons) made the breakdown pass and was followed by a Ferguson SP-10 11-wheel self-propelled rubber-tire roller. The final rolling was done by an Austin-Western 10-ton tandem. A Huber 10-ton tandem was also used to save time on move-backs and as a standby.

Automatic paving plant

Back at the quarry site, the Cedar-rapids G 40 automatic bituminous mixing plant turned out bituminous concrete.

The three sizes of aggregates stockpiled by the crushing outfit were dowed to a recovery tunnel by an International TD-14 tractor-dozzer. Inside the 7-foot Armco pipe tunnel, two Syntron feeders loaded calibrated amounts of the two sizes of rock onto a recovery conveyor. A shop-built belt feeder added the required volume of sand. The 24-inch recovery conveyor led out of the tunnel to a 30-inch x 80-foot conveyor that fed the dryer. These feeders and conveyors were all remotely controlled from the plant's central control station.

The materials were dried in a 72-inch x 30-foot dryer fired with bunker fuel by a burner using low-pressure air.

The paving asphalt was delivered by truck-trailers from the plant of American Bitumuls at Portland and was stored in two tanks having a capacity of 25,000 gallons. These tanks



BY KEN DASKEY

About the Author. Ken Daskey is well qualified to provide valuable assistance to his customers. He has been with the Company for 14 years, and spent 10 years in Commercial sales.

In addition, he has received specialized schooling in an asphalt training course at his Company's Whiting, Indiana, refinery.

Asphaltic Concrete Corporation paved a two-mile stretch of one of the most heavily traveled streets in St. Louis using 7 P.M. to 3 A.M. shifts. The route carries U.S. 66, 50 and Missouri 30, in addition to a tremendous load of city traffic southwest through the city. The specification hot mix was laid on the 80-ft. wide street in 12 ft. strips so that the street was always open to traffic. Putting down 1,350 tons of Asphalt established a new all time eight hour shift record for the city of St. Louis.

We played a part in the job by always having Asphalt available for delivery to A.C.C.'s

batching plant on time. Deliveries were from American's Wood River refinery, less than fifteen miles from the job. Being sure of deliveries, A.C.C. could plan work and know it could keep to the schedule.

When Asphaltic Concrete Corporation buys Asphalt from American Oil they get three big benefits: (1) strategically located refineries—a source of supply close to the job. (2) A supplier of Asphalt they can depend upon. (3) Technical assistance to help them trouble-shoot the job.

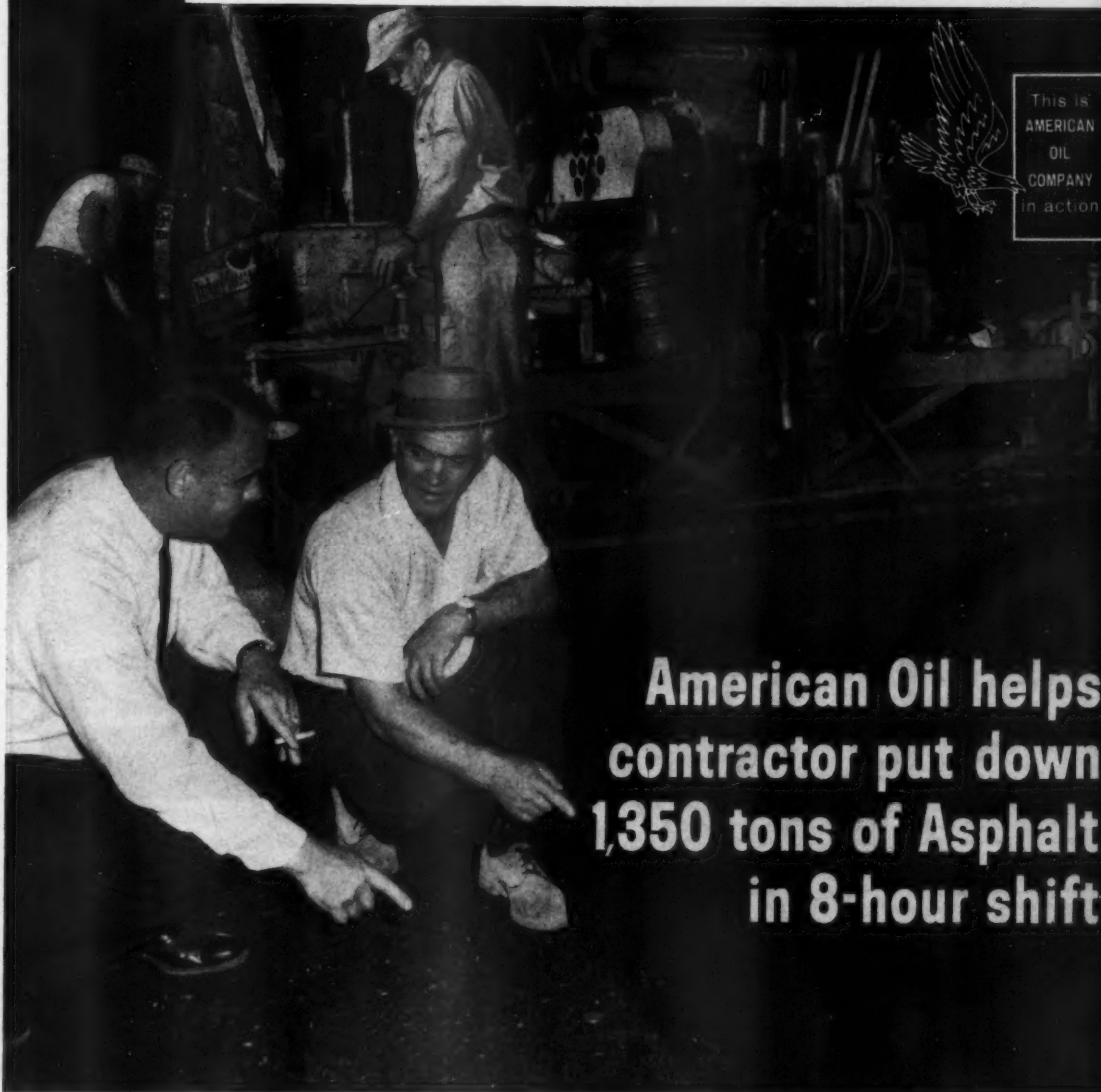
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Night shift and the American Oil man is there. American Oil's Ken Daskey discusses application of Asphalt with Pete Pellin, job superintendent for Asphaltic Concrete Corporation. Night shift idea won editorial praise from a St. Louis newspaper.



**American Oil helps
contractor put down
1,350 tons of Asphalt
in 8-hour shift**

For more facts, use Request Card at page 18 and circle No. 275

and the 10,000-gallon fuel-oil tank were heated electrically under automatic controls with heating units by the Petroleum Heating Co., Seattle. The weigh bucket, lines, pumps, pug-mill, etc., were heated by hot oil supplied by an electrically operated Petroleum Heating Co. hot-oil heater.

The plant controls were completely automatic so that once a mix was set up, the operator simply started the cycle for each truck load. The controls for starting and stopping, selecting the mix to be produced, and determining the number of batches in the sequence were all located at a control

center near the base of the plant tower. From this position, the plant operator could watch the complete operation and maintain full control of the plant while sitting in the shade of the asphalt storage tank. The electrical controls for the plant were supplied by Hardy Scales Electrical Corp.

With this all-electric plant, there was one annoying factor that cropped up on this job. The setup was within four miles of Bonneville Dam, yet there were times when there was not sufficient power available on the line—a local rural distribution line—and Dorman had to use a Cat D337 gen-

erator set to supply the deficiency.

On the paving operations, H. "Red" Hoyland was superintendent for Dorman Construction Co., Kenneth E. Harten was plant superintendent, and H. Picard operated the plant. Bob Bryant was paving foreman. Jack Schurman supervised the grading.

The project was handled from the Portland Division of the Oregon State Highway Commission. A. E. Johnson is division engineer. The resident engineer on the project was Clay Coronet. The plant inspector was E. H. Ragsdale, and the paving inspector was C. Gartrell.

THE END

Avoid legal pitfalls

Interemployment problem on construction job

THE PROBLEM: A ready-mix concrete company delivered material to a paving contractor in forms at a job site. It did not agree to aid the contractor in leveling the concrete after it had been dumped from trucks, but the ready-mix company permitted its drivers to accommodate the paving contractor by using the delivering trucks to pull a strike-off bar in the leveling process. While thus aiding the paving contractor, one of the truck drivers negligently backed up his truck and injured one of the

contractor's men. Was the ready-mix company liable in damages?

THE ANSWER: Yes. (*Vontress v. Ready-Mixed Concrete Co.*, 104 N. W. 2d 331, decided by the Nebraska Supreme Court.)

The court rejected the company's contention that, because the truck was backed by the driver in response to signals from the contractor's employee, the driver was for the time being the exclusive employee of the contractor. The fact that the contract between the company and the con-

tractor did not require the company to thus accommodate the contractor was immaterial. It was enough that the company knowingly permitted its drivers to give the contractor such assistance.

Lien claim was void

THE PROBLEM: An Ohio statute entitled a lessor of equipment to a highway contractor to secure a lien against funds due to the contractor from the state by filing a sworn statement of the lien claim with the proper public board or officer. A statement asserting a lien was filed, but it failed to show that the facts stated were

For more facts on insert, use Request Card at page 18 and circle No. 337

sworn to before a notary or other person legally empowered to administer oaths. Was the lien claim void?

THE ANSWER: Yes. (*A. Bentley & Sons Co. v. Thornmyer*, 166 N.E. 2d 433, decided by the Ohio Court of Appeals, Franklin County, Columbus.)

The court noted that the lien statute is so worded that it is just as important that the lien statement show on its face that it was sworn to as that it be itemized.

The statute broadly covers all sorts of liens of contractors, subcontractors, materialmen, and laborers on private and public construction projects, and so is broadly covered by the court's ruling: The lien as provided is a drastic remedy and is in addition to other remedies provided by law requiring that the statement be itemized and sworn to. The law clearly intended to prevent the abuse thereof by filing padded or inaccurate statements. That which is filed should be sufficiently explicit and complete not only to set forth the items but to show in clear and unmistakable language that their accuracy was vouched for under oath by the one filing the lien. Unless the evidence that the statement was sworn to is in form sufficient to warrant an action for perjury in a proper case, the form is simply insufficient.

Excusable delay limited in scope

THE PROBLEM: A public-housing construction contract specified that the contractor should be liable for liquidated damages for inexcusable delay in performance. Delay in completion was partly due to excusable delay caused by labor shortage. The period of shortage of plumbers overlapped but exceeded shortage of electricians, lathers, and plasterers. Was excusable delay for the purposes of assessing liquidated damages limited to the period of plumber shortage?

THE ANSWER: Yes. (*Anthony P. Miller, Inc. v. Wilmington Housing Authority*, 184 Fed. Supp. 273, decided by the United States District Court, District of Delaware.)

Delayed contractor could claim damages

THE PROBLEM: A municipal bridge-construction contract was signed upon a mutual but erroneous assumption that the necessary right-of-way had been acquired. Was the contractor entitled to choose between canceling the contract or proceeding with the work and claiming damages?

THE ANSWER: Yes. (*Nix, Inc. v. City of Columbus*, 171 North Eastern Reporter, 2d, 197, decided by the Ohio Court of Appeals, Franklin County.)

The contract specified that the contractor was not entitled to damages for delay from any cause, and that acceptance of final payment by the contractor released the municipality from all claims growing out of such work. However, the municipality and contractor both signed the contract

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Edited by A. L. H. STREET Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

under an erroneous assumption that the municipality had acquired the necessary right-of-way. Since a 4-month delay in construction resulted in a higher cost, the contractor completing the work was entitled to recover damages caused by delay. Acceptance of final payment of the contract price did not release the city from the contractor's claim for damages in this case.

The contractor's acceptance of an extension of time in which to complete work did not constitute a waiver of his right to collect damages resulting from delay.

Written agreements that are incomplete

THE PROBLEM: An exchange of letters offering to perform certain work and accepting the offer may constitute a written contract, within the rule of law that neither party may later assert that there were certain conditions orally specified that should have been included in the written contract, unless those conditions were inadvertently omitted. But where the letters or formal written contract are silent on matters essential to complete performance of the job, is oral evidence admissible?

THE ANSWER: Yes. (Caputo v. Continental Construction Corp., 162 N.E. 2d 813, decided by the Massachusetts Supreme Judicial Court.)

This was a suit by a subcontractor to collect pay from a general contractor for work and materials furnished on a bridge construction and repair job. The court decided that where letters relating to certain subcontracts between contractor and subcontractor did not contain matters that normally would be included in such contracts—such as when subcontractor was to complete performance, method of payment, provisions as to insurance, and specifications and standards to be complied with—it would be assumed that the parties never intended the letters to constitute their entire agreement, and, in such circumstances, evidence of conversations relating to oral agreement of the parties in regard to the contracts was admissible.

Grading contract was ambiguous

THE PROBLEM: Plaintiff in constructing a housing project awarded to defendant a written contract to furnish the labor, material, and equipment needed to clear, grade, and excavate the site. While the work was progressing, a dispute arose as to the scale of payments to which de-

fendant was entitled for transporting fill. On failure of the parties to agree, defendant quit work. Plaintiff sued for damages for breach of the contract and defendant counter-claimed for damages, asserting that plaintiff repudiated its contractual obligation. On the facts proved, was plaintiff entitled to damages?

THE ANSWER: Yes. (Pines of Islip, Inc., v. Island Concrete Corp. 196 N. Y. Supp. 2d 252, decided by the New York Supreme Court, Nassau County.)

The court reasoned that the con-

tract was not clearly worded as to the scale of payments to be used for transporting fill. It could be plausibly argued that the contract was so worded as to fix the rate of compensation at \$5.50 per 10-yard water-level truck load and nothing more. The contract did not say that fill had to be carted in loads of that size and no other. Defendant unsuccessfully contended that since each of its trucks delivered 13 yards per load, and that since delivery tickets were initialed at the time of delivery by an employee of plaintiff, it was entitled

to recover \$7.15 per 13-yard truck load. The facts proved showed that defendant inexcusably broke the contract. Plaintiff was entitled to \$30,000 damages.

Owner was not liable to contractor's employee

THE PROBLEM: An owner contracted for a road across his land with an independent contractor. An employee of the contractor was killed when a crane boom came into contact with an uninsulated 2,300-volt electric wire 32

HANDY-REACH POWER-CONTROLS

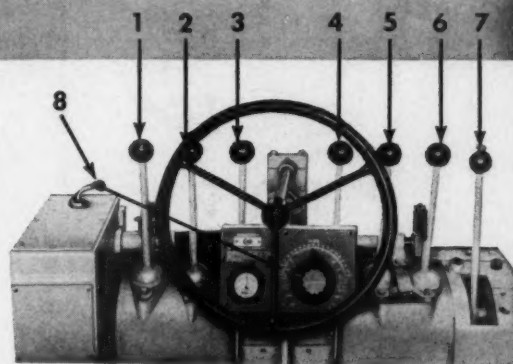
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One of the main reasons you get more work done with LW graders is that they're fast, simple, and easy to operate. Controls are in "natural" locations and movement is smooth, effortless. Blade-movement speed is constant, too, regardless of the number of controls in use. Result: You cut non-productive blade-swing time... complete more grading jobs each shift.

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LW grader controls are conveniently mounted in a row, with most-used levers at the ends—left and right—where your operator can quickly put his hands on them (see sketch). Next most-used controls are in the 2nd positions... easy to grasp without looking. Functions of these levers are so arranged that your operators can work 2 at a time with the same hand if needed. Thus he can frequently operate 4 levers with 2 hands... reducing length and number of manual movements.

Let us tell you about all the proven-performance advantages on LeTourneau-Westinghouse graders that help you complete jobs faster, easier, and at lower cost. 7 sizes, 85 to 190 hp. Ask for a demonstration. No obligation, of course.



This "handy-reach" arrangement of LW grader controls was developed after a thorough scientific study of control-lever usage. Automatic counters were placed on the control levers of various machines doing typical grader work. Each time the operator pushed or pulled a control his action was recorded and counted. The statistics thus gathered were used by LW engineers to determine the most efficient arrangement for grader controls. Result?... the fast-operating "natural" control system built into LeTourneau-Westinghouse graders.

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avoid legal pitfalls

(Continued from preceding page)

feet above the ground. Employees of the contractor had been warned of the presence of such wires and the wires were in plain view. Was the owner liable for the employee's death?

THE ANSWER: No. (Jones v. Appalachian Electric Power Co., 115 South Eastern Reporter, 2d, 129, decided by the West Virginia Court of Appeals.)

The court noted that an owner or occupant of land owes to an invitee the duty of due care, and the invitee has a right to assume that the premises are reasonably safe for the purpose for which he is invited to enter them. But the owner or occupant

is not an insurer of the safety of the trespasser, licensee, or invitee, even when such person is injured or killed by coming in contact with high-voltage electric wire.

Liability for damages caused by blasting

THE PROBLEM: The superintendent in charge of excavation, after being informed of damage to nearby houses by blasting, did not change the number or intensity of blasts which continued for six or seven months, and there was no investigation to determine whether damage was being done.

Was the injury "willfully" inflicted, thereby entitling a house owner to an award of \$500 punitive damages in

addition to actual damages?

THE ANSWER: Yes. (Dalon Contracting Co. v. Artman, 115 South Eastern Reporter, 2d, 377, decided by the Georgia Court of Appeals, Division No. 2).

The court decided that a jury, upon being given detailed facts as to the condition of the plaintiff's premises before and after the damage, exact photographs accompanied by descriptions of the defects which developed, testimony as to the probable cause of each of these defects from both the plaintiff's and defendant's witnesses, and opinion evidence as to the cost of repairing the whole premises, had sufficient evidence upon which to award damages in such amount as was in their opinion chargeable to the defendant's acts.

For more facts on insert, use Request Card at page 18 and circle No. 280

Underground cable was accidentally cut

THE PROBLEM: A street-paving contractor was sued by a telephone company for accidental severing of an underground cable in excavating the site. No negligence was proved. Was the contractor liable?

THE ANSWER: No. (Vowell Construction Co., appealing defendant, v. Mountain States Telephone & Telegraph Co., plaintiff, 335 South Western Reporter, 2d 804, decided by the Texas Court of Civil Appeals, El Paso.)

The court ruled that the contractor was not liable on a theory that a clause in the paving contract made the contractor liable, nor on a theory that the contractor trespassed upon the street underground area occupied by the telephone company.

On the first point the paving contract specified: "All existing property, public or private—trees, fences, sewers, water and gas mains, telephone conduits and cables, embankments, sidewalks, paving, or any other structures in the vicinity of the work shall be protected from injury by the contractor during construction and until the completion of the work. The contractor shall be liable for all damages done to such structures as above provided, and shall save and keep the owner harmless from any liability from injuries, damages or repairs to same."

The court said that clause merely bound the contractor to indemnify the owner against liability to third parties, and did not create direct liability by the contractor to the third parties.

Contractor's liability for personal injury

THE PROBLEM: Was a subcontractor bound to indemnify the prime contractor for liability to a subcontractor's employee for injury suffered on the job through the prime contractor's active negligence?

THE ANSWER: No. (Carlone v. Harisdale Construction Corp., 201 New York Supplement, 2d, 288, decided by the New York Supreme Court, Bronx County.)

The subcontract provided that the subcontractor would indemnify the prime contractor if any employee of the former should be injured by the use "of any scaffolds, hoistways, hoists, ladders, or other equipment belonging to or rented by the contractor." The accident here was caused by a defective beam, which was to become part of the building; hence it was building material rather than equipment.

Another paragraph provided for indemnity "against all claim or damage arising out of or in connection with the performance of the prime contract." This paragraph did not clearly express intention that the contractor should be indemnified against its own negligence.



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Convention Calendar

May 8-10 Highway Transportation Congress

Ninth congress, Mayflower Hotel, Washington, D. C. Arthur C. Butler, director, National Highway Users Conference, 966 National Press Bldg., Washington 4, D. C.

May 11-12 American Institute of Steel Construction

Thirteenth annual national engineering conference, Hotel Leamington, Minneapolis, Minn. AISC, 101 Park Ave., New York 17, N. Y.

May 22-24 Construction Specifications Institute

Fifth annual convention, Commodore Hotel, New York, N. Y. Ronald S. Ryner, executive secretary, CSI, 632 Dupont Circle Bldg., Washington 6, D. C.

May 22-25 Design Engineering Conference of the American Society of Mechanical Engineers

Conference, Cobo Hall, Detroit, Mich. Robert M. Baldini, assistant manager, ASME, 29 W. 39th St., New York 18, N. Y.

May 24-27 National Rivers and Harbors Congress

Forty-eighth national convention, Mayflower Hotel, Washington, D. C. William H. Webb, executive vice president, NRHC, Suite 523-A, La Salle Bldg., 1028 Connecticut Ave. N.W., Washington 6, D. C.

May 29-30 Wire Reinforcement Inst.

Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Frank B. Brown, managing director, WRI, 1049 National Press Bldg., Washington 4, D. C.

May 29-June 3 Concrete Reinforcing Steel Institute

Meeting, The Greenbrier, White Sulphur Springs, W. Va. H. C. Delzell, managing director, CRSI, 38 S. Dearborn St., Chicago 3, Ill.

June 12-13 National Limestone Inst.

Board meeting, Sheraton Blackstone Hotel, Chicago, Ill. Robert M. Koch, president, NLI, 210 H St. N.W., Washington 1, D. C.

June 12-13 Fundamentals of Welding Engineering

Summer conference course, Ohio State University, Columbus, Ohio. W. L. Green, course supervisor, Department of Welding Engineering, 190 W. 19th Ave., Ohio State University, Columbus 10, Ohio.

June 15-24 International Construction Equipment Exhibition

Exhibition, Crystal Palace, London, England. International Trade Fairs, Ltd., Commonwealth House, New Oxford St., London, W. C. 1, England.

June 19-22 The Asphalt Institute

Midyear business meeting, Denver-Hilton Hotel, Denver, Colo. D. L. Knott, Asphalt Institute Bldg., University of Maryland, College Park, Md.

June 25-30 American Society for Testing Materials

National meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. ASTM, 1916 Race St., Philadelphia 3, Pa.

July 4-7 National Society of Professional Engineers

Annual meeting, Olympic Hotel, Seattle, Wash. Paul H. Robbins, executive director, NSPE, 2029 K St. N.W., Washington 6, D. C.

July 10-12 American Society of Landscape Architects

Sixty-second annual meeting, Harvest House, Boulder, Colo. Samuel Huddleston, general chairman, ASLA, 2935 S. Josephine St., Denver 10, Colo.

July 17-19 School for Highway Superintendents

School, Cornell University, Ithaca, N. Y. J. W. Spencer, highway research and extension engineer, SHS, Department of Agricultural Engineering, Riley-Robb Hall, Cornell University, Ithaca, N. Y.

July 23-25 National Bituminous Concrete Association

Midyear meeting, French Lick-Sheraton Hotel, French Lick, Ind. NBCA, Suite 908, 1145 19th St. N.W., Washington, D. C.



Contractors attending Barber-Greene's asphalt conference in Aurora, Ill., are viewing the B-G Model 873 compact finisher that travels on rubber, paves on crawlers. The entire company line was also demonstrated.

Barber-Greene holds asphalt conference

Barber-Greene Co. recently held an all-day asphalt conference at its plant in Aurora, Ill. More than 100 representatives of Illinois firms handling asphalt-paving projects attended.

Among the subjects covered at the conference were cold-feeding methods and equipment; the results of Barber-Greene's 2-year dryer-testing program; new dust-collection equipment for meeting stricter air-pollution codes; latest improvements in the firm's Batchomatic asphalt plants; and new developments in machines for asphalt paving and road widening.

The company also gave a drive-through demonstration of all five asphalt-paving machines in its line, including the new Model SA-40 general-purpose finisher, and conducted a tour of the Barber-Greene manufacturing facilities to see actual production of the B-G line.

400 Feet Daily



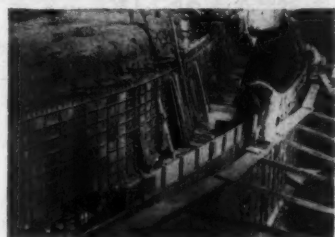
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California contractor, Elmer J. Freethy saved substantially in pouring a channel lining for a flood control project at Pleasant Hill, California. It involved curved walls 9 ft high and 4,000 ft long.

Symons 8 ft Steel-Ply Forms were used with Symons New Extension Bracket, to get the additional foot. In addition to speed, the extension gave the final foot the appearance of a cap on the wall.

Wall specs called for a 1/2" extension joint every 40 lineal feet. The con-



Note extension brackets in foreground and minimum amount of bracing required for curved walls.

tractor had the 1/2" premoulded material cut 3" wider than the wall and used the wall forms to hold it in position. By using a 1" filler on these joints they were able to tie the forms together with long connecting bolts and pour the walls continuously.

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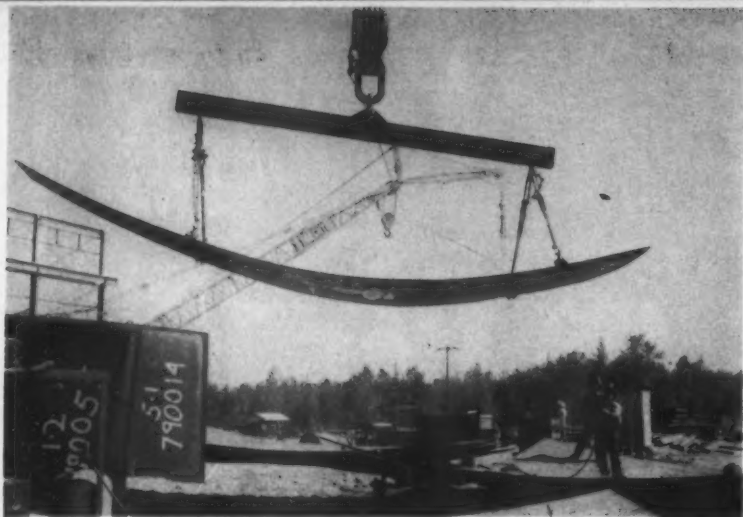
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Individual sections of $\frac{3}{4}$ -inch steel plate for the walls of a containment sphere for Consumers Power Co.'s nuclear power plant near Charlevoix, Mich., are unloaded from a flatcar by a 25-ton stiffleg derrick at the job site.

Assembling this steel sphere calls for

Precision work all the way

Contractors and Engineers staff article



A workman drives bull pins into key plates to align steel sections while a welder waits to tack them for a temporary connection. The composite section will then be lifted to the tilt table for permanent welding prior to erection.



A composite of three sections of the steel plate rests on the tilt table while its outside seams are automatically welded. The automatic welder stays level while the table is slowly tilted.

Shaping a 130-foot-diameter sphere from 222 individual plates of steel is just one of the many tricky facets of construction work on the Consumers Power Co. nuclear power plant near Charlevoix, Mich.

Each plate of $\frac{3}{4}$ -inch steel traveled hundreds of miles and went through a number of steps from the time it left the fabrication plant until its final positioning in the sphere. Each step had to be carefully controlled, for each plate was required to fit precisely into its place on the curving surface of the sphere. Further, each plate had to be perfectly welded to its neighbor, for the sphere is a pressure-tight containment vessel.

This is the challenge met by Chicago Bridge & Iron Co., which designed, fabricated, and erected the sphere. Another difficult task—that of building a 100-foot-high concrete structure within the big steel ball—is the responsibility of Bechtel Corp., San Francisco, prime contractor for design and construction of the facility.

The Big Rock Point Nuclear Plant

is being built for Consumers Power Co., Jackson, Mich. The \$28 million facility will have an initial capacity of 50,000 kw, and is being designed for a maximum expected gross of 75,000 kw. The plant is located on a 600-acre site on the shore of Lake Michigan about four miles northeast of Charlevoix.

This is a ball-and-box type of plant, with the big steel ball holding the water-heating reactor and a box-shaped building containing the turbine generator and related facilities.

The uranium-oxide pelletized fuel of the reactor is in stainless-steel tubes that come into contact with water and turn it into steam. From a steam drum inside the containment vessel, the steam passes to the turbine in the adjoining building. The condensed steam returns to the steam drum and then to the reactor. The purpose of the steel sphere surrounding the reactor is to contain radioactive material in the unlikely event of any type of failure in the operating system.

Inside the 130-foot-diameter vessel is a multilevel concrete structure rising to within about 30 feet of the top

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NEW FLEX-PLANE SPREADER



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CONCRETE SPREADER—CHOICE OF TRACTION DRIVES. GAS-ELECTRIC—Infinite speeds in forward or reverse from 0 to 60 F.P.M. MECHANICAL TRANSMISSION—10 forward speeds—maximum 77.8 F.P.M.—and 10 speeds in reverse.

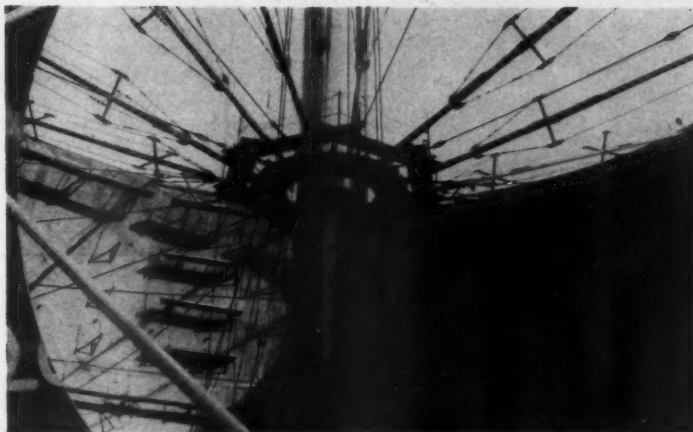


COMBINATION FINISHER-FLOAT—Two pieces of paving equipment in one. Frames can be extended manually or hydraulically from 12' to 26'. Gas-electric powered—separate screed and traction drives. (Send for Bulletin 59-5.)

CONTRACTORS AND ENGINEERS



A Unionmelt 600-amp automatic welding head working from a P&H rectifier moves down the outside seam of the composite plate on the tilt table. The control switch, foreground, starts and stops the motors that tilt the table.



Interior view of the partially completed sphere showing the pipelike tower that supports the lifting derrick. Steel rods fanning out from the tower like spokes support the upper plates. Cables running downward support the lower plates.



Interior of the sphere, showing the nearly completed bottom ring. Cables from the tower's mid-section hold up the bottom plates. The plate at the very bottom of the sphere will be installed after the tower has been removed.

of the sphere. At its center, surrounded by heavy walls of concrete, is the 130-ton stainless-steel reactor vessel. Directly above the reactor is a 60-ton gantry crane. In the various chambers surrounding the reactor are heat exchangers, fuel-storage compartments, demineralizers, recirculating pumps, and other supplementary equipment.

Construction started last spring with the building of a railroad spur into the site and clearing and grading of about seven acres. Steel erection for the sphere was completed in mid-January of this year. The first operation of the plant is scheduled for late 1962.

Bowl-shaped hole comes first

Excavation of a bowl-shaped hole was one of the first steps in the construction of the sphere. The lower portion of the sphere rests in this 32-foot-deep hole.

To dig and shape the hole, the contractor made use of a P&H 755B crane equipped with a 1½-yard drag bucket. At times the glacial till was so hard that it required ripping by a dozer working in the hole. The crane,

working from the edge of the excavation, swung the material off to one side. The hole was excavated to 2½ feet below the planned surface of the steel sphere. The space between the steel and the rock was filled with concrete after steelwork had been completed.

With the excavation completed, Bechtel's men chuted concrete to a 3½-foot-thick footing at the very bottom of the hole. The sole purpose of this footing was to support the 295-foot-high tower derrick used for erecting the steel.

Precasting saves time

Around the edge of the hole at ground level, the men formed and placed 14 concrete pedestals. Joined by concrete beams, these pedestals support the pipe columns. The steel columns, connecting with the equator course of the sphere, carried the entire sphere during erection. Ultimately, the weight of the sphere and the interior concrete is to be carried by the exterior concrete resting on ground.

A time-saving construction method

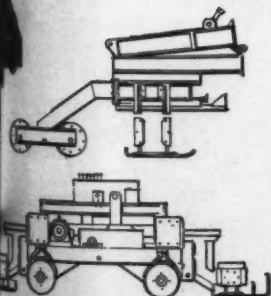
(Continued on next page)

another great addition

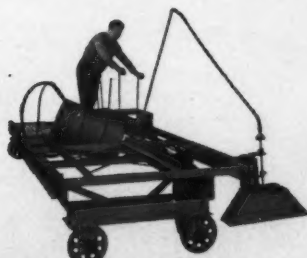
to Heltzel's line of paving equipment.

Working widths from 12' to 26' at speeds up to 77.8 feet per minute. Operator has complete control over spreading action—sweep can be stopped at any position and direction reversed. Features gas-electric power with separate motors and controls for screed, sweep, and traction drive. Pneumatic tired wheels for easy transport are optional. Can also be equipped with vibrator attachment mounted on sweep or screed.

For complete information about the new FLEX-PLANE SPREADER or other FLEX-PLANE finishing equipment, see your local Heltzel distributor. Write today for descriptive literature.



Finisher or float trailer can be purchased separately. Finisher section can be used singly as float-screed finisher.



AUTOMATIC SPRAY-CURING MACHINE—Fast, economical method for applying membrane curing compound. Spray head is synchronized to machine travel for skip-proof, overlapping coverage. (Send for Bulletin 59-17.)

For more facts, use Request Card at page 18 and circle No. 284

HELTZEL FLEX-PLANE

THE HELTZEL STEEL FORM & IRON CO.
WARREN, OHIO

Unmatched Versatility
in **TRENCHING!**

THE MOST PORTABLE!

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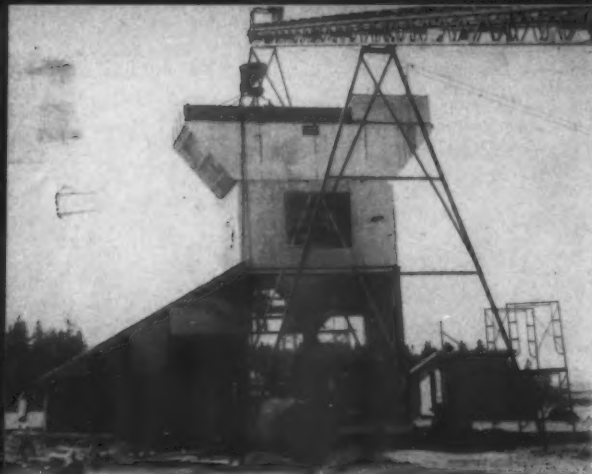
New Century
TRENCHIT

with the **SENSATIONAL
VERTICAL BOOM**

- Trenches right up to sidewalks, curbs, walls
- More readily dislodges obstacles
- Write for complete bulletin and prices

CENTURY ENGINEERING CO., Inc.
Waukesha, Wisconsin

For more facts, circle No. 285



This Clark Industries automatically controlled batch plant supplies concrete for the interior and exterior concrete work. The plant charges to a Blaw-Knox 6-yard transit mixer on a Ford truck.

sections in the assembly yard. The smaller derrick also fed the composite sections to the derrick on the tower.

Close tolerances

At the Chicago Bridge & Iron plant in Chicago, the individual $\frac{3}{4}$ -inch plates were rolled, shaped, and cut to within very close tolerances (per ASME code for unfired pressure vessels). Accuracy of manufacture was

maintained so that there was no need to pre-assemble the individual plates at the plant.

The derrick placed three and sometimes four individual plates on a ground assembly platform. Here the plates were joined together and pulled into precise alignment by a combination of muscle, key plates, and bull pins. A workman using a maul wedged the bull pins into the key plates to align the $\frac{3}{4}$ -inch steel. A welder then tack-welded the plates, aligning lugs to hold the composite plates together.

The composite plates varied in size and weight according to their position

(Continued from preceding page)

was employed to form the beams connecting the pedestals. The beams were so close to the edge of the hole that forming and pouring them in place would have been difficult. The contractor speeded the forming by precasting the 26-foot-long beams on a level area near the hole. After the members had been cast, they were placed by crane on the tops of the partially built pedestals. The top lift of concrete of the pedestal was tied in with the dowel steel of the precast beam.

Pipeline tower supports derrick

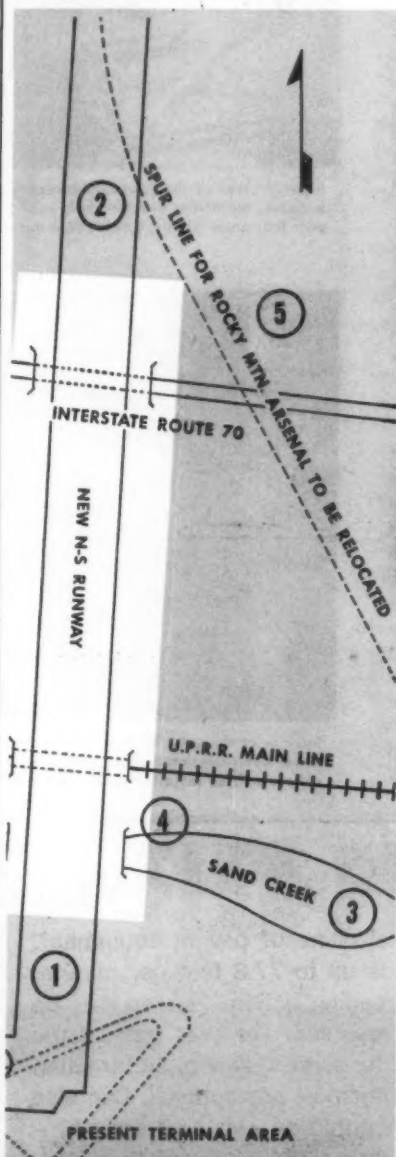
With the foundation concrete in place, the Chicago Bridge crew took over. One of its first jobs was to build a 50-ton derrick that would rise 295 feet from the center of the bottom of the hole.

This erection equipment consisted of a 145-foot pipeline tower supporting a 50-ton derrick. The derrick had a 150-foot mast and a 100-foot boom. Cables powering the derrick passed down through the tower and out through a hole at the base. From there, the cables went through sheaves to a 3-drum Clyde hoist at ground level.

The supporting tower was something new for this type of construction. Prior to this, Chicago Bridge had used a 10-foot-square structural-steel tower for similar erection work. The 6-foot-diameter pipe that replaced the structural tower was more compact and easier to erect. It was designed to carry a 100-ton derrick. The top of the tower, as well as the top of the mast, was guyed at four places, each guy consisting of three 1-inch cables.

No crane is needed to erect the tower; it almost pulls itself up by its own bootstraps. Actually, a 25-foot gin pole clamps onto the side of the previously erected pipe section. With power supplied by a hoist at ground level, the next pipe section is pulled up and bolted into place. Then the gin pole is hoisted up to clamp onto the top of that pipe section, and the process is repeated. A total of eight sections completes the tower.

A 25-ton derrick was set up on the site to assist in the erection of the sphere. This derrick unloaded the individual steel plates from railroad flatcars and handled the composite



Refer to engineering sketch of project to locate action pictured: (1) Payscraper and TD-25's strip frozen soil from old dump area; (2) Payscraper units with "25" pushers cut drainage channel; (3) TD-25 bulldozer works near creek overpass site; (4) Power Unit pumps from Sand Creek to wet down ashy dump material; (5) Equipment grades near spur track that will be relocated.

Northwestern to build

Both Payscraper models have 4-speed power-shift torque converter transmissions—of the planetary type. Besides providing smooth shifting and speeds for every need, this torque converter gives automatic lock-up for direct, low-speeding mechanical drive in 2nd, 3rd, and 4th gears. "Northwestern's" Payscraper operators also increase production with rack-and-pinion power steering, positive air-braking; fast, complete power bowl-control.



tion in the sphere. The largest measured about 30 x 40 feet and weighed 18 tons.

Tilt tables for welding

After the three or four individual plates had been temporarily joined, the composite section was lifted to an electrically controlled tilt table. The surface of the tilt table fitted the concave surface of the composite plate. The surface of the table could be tilted in four different directions—to the north, south, east, or west. The tilting facilitated automatic welding. The welding machine stayed level as the curved surface of the

composite plate slowly changed its position.

There were two tilt tables—one for welding each side of the composite plate. The automatic welding was done with a Unionmelt 600-amp welding head working through a P&H 400-amp rectifier. A torch attached to the welding head heated the joint in front of the weld.

After the composite plates had been welded on both sides and the seams X-rayed, each was lifted by the tower derrick into position on the sphere.

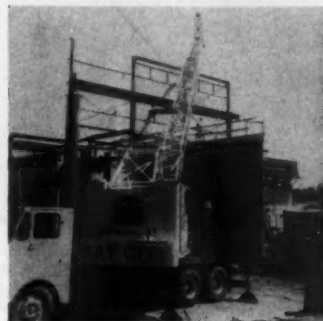
The first step in steel erection was to set up the 14 steel-pipe columns that rose from the concrete pedestals

to tie in with the equator course of the sphere. This was the first course to be erected.

The equator course was followed by two successively lower courses. Then the upper three courses, plus the top saucer plate, were welded in place. In erecting the composite plates, a 4-point, balanced erection procedure was followed. That is, first a plate was hung on the north side of the sphere, and then one was hung on the south side to balance it; the east side came next in the erection procedures, and then the west side as a balance.

To hold the lower plates in posi-

tion before welding, the free sides were supported by cables strung diagonally down from the central tower, or from shores rising up from the ground. To hold the upper plates in position, steel rods stemmed out from the central tower to the free sides of the plate. Welding of the seams on the sphere was done by hand with electric welders using E7018 special electrodes.



A Bay City 25-ton truck crane assists in setting forms for the walls of the conventional part of the nuclear power plant.

Only after all this upper installation and removal of the erecting tower was the bottom plate installed.

Concrete pumped into place

After the sphere was completely enclosed, it was tested for leakage under a pressure of 33½ psi. An access hole at ground level was then opened up to permit construction of the interior concrete structure.

Concrete is being batched by a Clark Industries automatically controlled batch plant set up on the site. For placement of much of the 8,000 cubic yards of concrete inside the sphere, a Rex Pumpcrete machine is being used. For lifting forms and steel inside the sphere, a cable system working through sheaves welded to the roof of the sphere is employed.

Both Bechtel and Chicago Bridge are being very safety-conscious on the project. Their superintendents constantly point out to their men the importance of safe working habits. Chicago Bridge requires that every man on the job wear safety glasses and a helmet, whether working in the shack or up on the steel. The strict enforcement of this regulation has practically eliminated eye injuries and has helped hold down lost-time accidents.

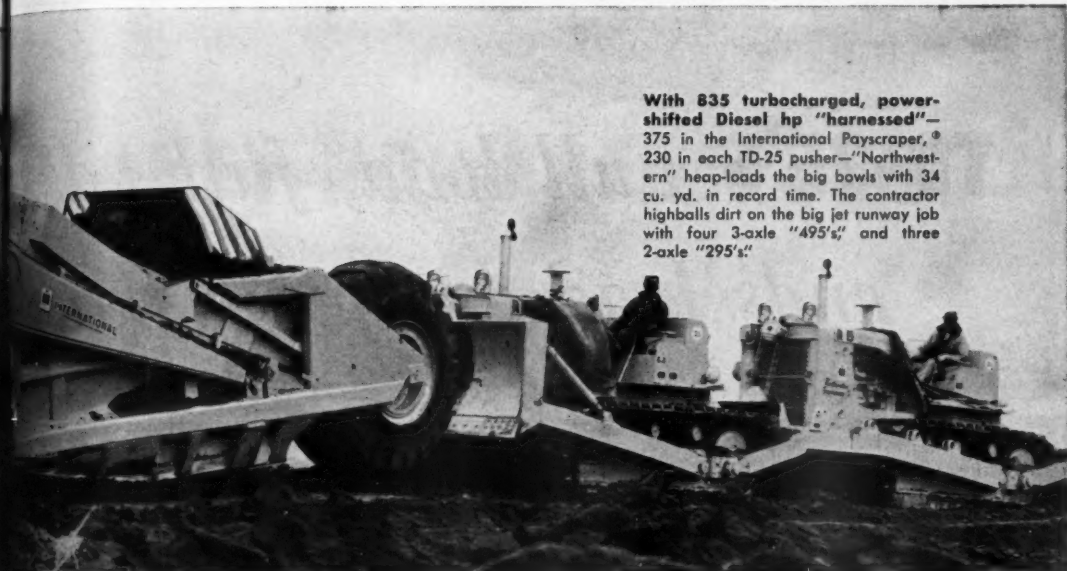
For Bechtel Corp., W. C. McKinley is project superintendent. John B. Feltes is superintendent for Chicago Bridge. Jerry Lescoe is construction superintendent for Consumers Power Co. **THE END**

New secretary-treasurer for Templeton, Kenly

■ Robert A. Ward is the new secretary-treasurer of Templeton, Kenly, & Co., Broadview, Ill., manufacturer of the Simplex line of mechanical and hydraulic jacks and pullers. Formerly chief accountant for the firm, Ward replaces Frank Krickhan who recently retired.

For more facts, use Request Card at page 18 and circle No. 286

With 835 turbocharged, power-shifted Diesel hp "harnessed"—375 in the International Payscraper,® 230 in each TD-25 pusher—"Northwestern" heap-loads the big bowls with 34 cu. yd. in record time. The contractor highballs dirt on the big jet runway job with four 3-axle "495's," and three 2-axle "295's."



Northwestern Engineering Co. uses 100% IH fleet to build new jet runway

Northwestern Engineering Company will span Union Pacific main line tracks—Interstate Highway No. 70—and a rambunctious creek—to build the north-south jet runway at Denver's Stapleton airport.

To do this huge job, the contractor must make a fill as high as 30 feet—to be carried on reinforced concrete structures over railroad, superhighway, and creek. Moreover, he must relocate a railroad spur, and also replace the ash-like debris of an old city dump with solid fill material.

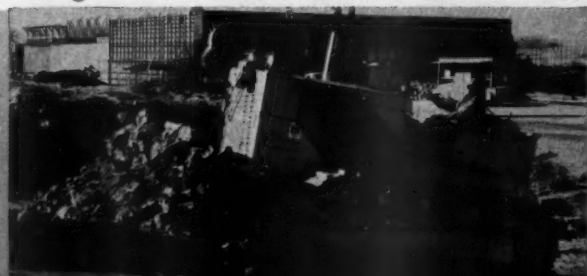
Northwestern's schedule calls for moving 1,123,000 cu yd of earth and completing the project in 400 days. And this 2.1 mile runway, that will handle the biggest and fastest jet aircraft, is being built from start to finish with International Construction Equipment.

Here are the powerful performance reasons behind this up-and-coming contractor's equipment choice. Let your International Construction Equipment Distributor demonstrate!

This International 450 power unit is pumping water from Sand Creek through a sprinkler system—for wetting down old city dump debris, so the scrapers can load and remove this loose, dusty material from runway site.

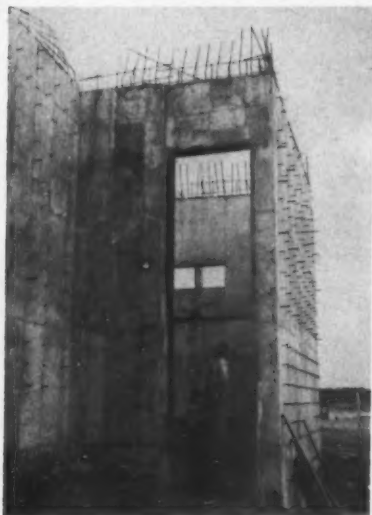
"Chuck" Loser, Project Superintendent for "Northwestern," stands on spur railroad section which will be relocated in building the jet runway. In background, a 295 Payscraper and TD-25 tractor are at work on the \$1,895,000 contract.

Six International TD-25's give "Northwestern" the bonus dozing and pushing capacity insured by Planet Power-steering, and Hi-Lo on-the-go power-shifting. Full-time "live" power on both tracks helps doze full blades, every pass. And torque converter "25's" speed up all four steps of the push-loading cycle.



**International
Construction
Equipment**

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE



This structure, with 16-foot-high doorway and concrete walls bristling with anchors for holding framework for simulated rock, typifies the unusual construction going on at Milwaukee's new zoo. The structure will house giraffes. A number of contractors are on the project, which requires widely different types of animal houses.



One of the complicated jobs is building "rocks" to simulate natural surroundings for the animals. This clay model of the black-bear den, on a scale of 1/2 inch to the foot, is in the lion house, where animals are displayed behind sloping panels of plastic-reinforced glass.



Model makers check the positioning of the reinforcing steel that forms the contours for a simulated rock wall. The network of steel is held in place by rebars welded to anchors in the concrete wall. Simulated rock is also used to face moat walls.



A P&H 25-ton truck crane buckets concrete from a transit mixer on a White truck to the Symons forms for the 26-foot-high walls of the giraffe house. Forms are braced from the inside.

Sloping slabs, 16-foot-high doors, simulated rock formations add up to

Intricate work

Contractors and Engineers staff article

Building a house for animals is more complicated than building a house for humans; animals come in all shapes and sizes, and their needs differ widely.

A hippo must have his house com-

TD-25'S Full load, full pass ends load-dropping, track-sto



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ditioned to the climate of the tropics. A Siberian tiger is right at home in a snowstorm. A monkey needs a 2-foot-high door; a giraffe, considerably more headroom.

While working on Milwaukee's new zoo, contractors are often faced with complex and even bizarre types of

construction requirements.

One of the more difficult feats is transforming vertical concrete walls to "granite." The stone formations camouflage the housing units of many of the animals.

A modernistic home for a Siberian tiger is made of precast-concrete

arches spanning 42 feet. Steel bars enclose the space between the four arches.

Zigzag and serpentine retaining walls make up the sides of the moats that separate the people from the animals. These odd-shaped and battered walls are tricky to form.

In the monkey house, glaziers must install electrically charged glass. The glass forms the front wall of each enclosure, and its surface carries an electric charge to keep the monkeys from daubing up the glass.

In the same building, the work of the mechanical contractor is complicated by two separate ventilating

systems. One circulates the air to the monkeys; the other circulates the air to the visitors. In this way, the monkeys won't catch the people's diseases, and the people won't catch the monkeys' diseases.

In the various animal shelters, floor slabs are sloped to meet drains. There are no flat slabs. Sloping slabs allow an automatic flushing system to clean the enclosures.

A \$13 million zoo

The new zoo is being built for the Milwaukee County Park Commission on a 140-acre site at West Bluemound Road and North 100th Street. Construction of the \$13 million facility started in 1956 with the building of the primate house, which is now open to the public. Also completed is a service building and a miniature railroad.

Nearly completed are an island for monkeys, surrounded by a water-filled moat; a building for elephants, hippos, and other pachyderms; a lion house; a giraffe house; an underground shelter for hoofed animals;

PLANET-POWERED PUSH

stopping steering losses

You Power-steer the International TD-25 by power-shifting either track. Full-time "live" power on both tracks, gives you full-profit production!

You make full-load turns without spillage — because Planet Power-steering eliminates load-spilling, load-limiting "dead-track drag."

With Hi-Lo on-the-go power-shifting, you shift down, to dig hard materials — shift up, to "run" with the load. When push-loading with the "25," you maintain solid contact on straight-away or curve — to speed heaping the bowls and get gear-higher "kick-outs"!

Exclusive Planet Power-steering makes the TD-25 the industry's only power-shifted 8-speed gear-drive, or 4-speed torque-converter tractor. And only the "25" is powered by the free-breathing, dual-valved 230-hp DT-817 turbocharged International diesel!

Compare bulldozing yardage delivered — time the push-loading advantages of the Planet Power-steered TD-25. Prove to yourself how "live-track" TD-25 push can multiply your "tight-bid" profits. Let your International Construction Equipment Distributor demonstrate!

Moving thousands of tons of outcrop shot-rock for mountain road right-of-way, this TD-25 picks up and delivers its full loads without sluing or slipping. Reason: with Planet Power-steering you run one track in high, the other in low speed range to equalize offset loading. And you steer with full power on both tracks full time — to avoid load-dropping interruptions!

Power-gaining Planet Power-steering helps you heap-load scrapers in record time — right where clutch-steered pushers lose half their push! Power-shifting either track up or down keeps solid push-block contact on curves. Power-shifting up, on-the-go, gives gear-higher kick-outs than ordinary. And with 7.5 mph reverse, the "25" repositions faster than slower rigs!

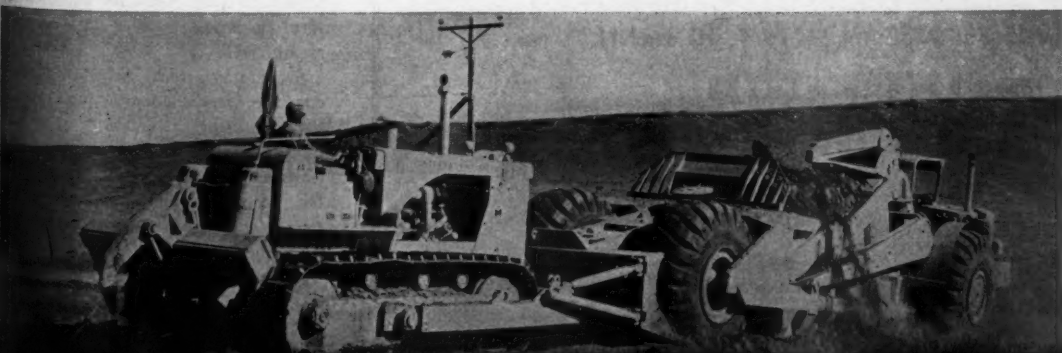


"Hanging a bench" on a mountainside, the TD-25 operator either upshifts the bank-side track — or downshifts the outside track. Then he makes full cuts under full power without "bank-nosing," rear-end skidding, or "lever fighting."



**International
Construction
Equipment**

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Ill.
A COMPLETE POWER PACKAGE



Perforated sheet metal, called Truss-Loop, is cut with an electric welder to fit the shape of the steplike ledgers leading down from the entrance to the black-bear den. Bars are kept to a minimum in this zoo; glass and moats separate animals and visitors.



After reinforcing bars and the perforated sheet metal are in place, 2 x 2 wire mesh is wired to the framework of reinforcing to form a base for the "rocks." Mortar is pneumatically applied. Chemicals and dyes are used to treat the surface.

For more facts, use Request Card at page 18 and circle No. 257



Serpentine walls, formed with Symons panels, surround the monkey island. The animals have a tunnel access to a modernistic glass and aluminum shelter.

For more facts on insert, use Request Card at page 18 and circle No. 289

(Continued from preceding page)

and four bear dens—each for a different type of bear.

Still to be constructed are an administration building, a small-mammal house, a bird house, an aquarium, a reptile house, and a building for Australian animals. Completion of the entire project is scheduled for 1964.

Much of the design and planning for the zoo has been handled by the Public Works Department of Milwaukee County. However, Grassold, Johnson & Associates, Milwaukee archi-

tectural firm, has been called upon to design the monkey house, the lion house, and the service building.

Although the forces of the park commission built the miniature railroad, most of the work is being done by private contractors. These include Dahlman Construction Co. (primate house); Becker Construction Co., Inc. (service building); Stevens Construction Co. (grizzly-bear den, lion house, and hoofed-animal shelter); E. C. Knuth & Co. (pachyderm building); Bell-Reichl, Inc. (monkey island, black-bear den, and giraffe house); and C. G. Schmidt, Inc. (simulated rock work). All companies are based in Milwaukee.

Buildings that look like cliffs

Most of the exhibit areas display the animals in their natural settings. Concrete buildings housing the animals are concealed by clifflike rock formations. Shrubbery is often planted on top of the buildings.

Instead of bars and fences, dry and wet moats separate the spectators from the animals and, in some cases, the animals from the animals. It may seem to a visitor that the zebra and the lions are living at peace with each other, while actually these natural enemies are separated by a hidden moat. The inside exhibit areas have bars replaced by plastic-reinforced glass set in sloping stainless-steel mullions. A low-voltage electric charge is maintained on the inner surface to keep animals away from the glass.

Most of the animal shelters are 1-story structures with concrete floor, walls, and roof. In the construction of the lion house, the giraffe house, and the pachyderm building, considerable care has to be taken in forming the inside wall surfaces. These are sandblasted and painted with plastic-base paint. Outside walls do not require such a smooth surface, for these are either concealed by simulated rock or faced with natural stone.

Building the odd-shaped retaining walls that make up the sides of the moats is a tricky business. In many cases, the forming is speeded by the use of Symons steel-backed panels.

How to build a granite rock

Perhaps the most difficult part of the construction is transforming concrete walls into stone cliffs. To start with, ½-inch steel anchor rods are set in the joints of the outside wall panels. In some cases, one end of the form tie is left in place to serve as an anchor.

Protruding several inches from the concrete, these anchors serve as welding points for a framework of reinforcing bars. The bars are bent to conform to the irregular shape of the desired formation. Dimensions for the shape are scaled from a carefully built model.

About an inch behind the layer of

CONTRACTORS AND ENGINEERS

Who's Hanson?

Hanson built the first full revolving ¾ cubic yard gasoline powered shovel in the United States.

Ever since then Hanson has been building some of the country's finest shovels and cranes of the smaller capacities.

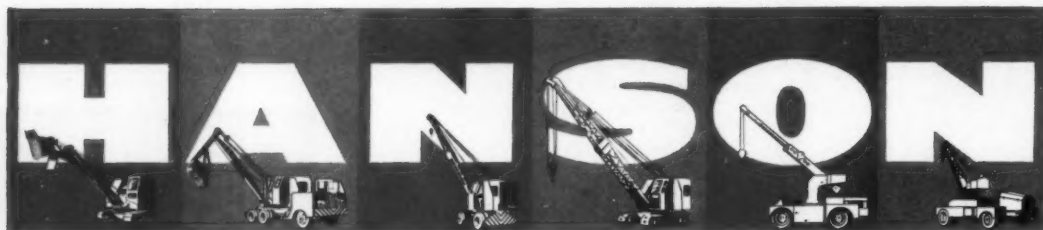
During World War II Hanson built heavy machinery trailers for the Engineers; torpedo cranes, minesweeping cranes and crawler cranes for the Navy.

During and after Korea Hanson built ¾ cubic yard, 20 ton truck mounted cranes for the Engineers and the Air Force.

After World War II and again after Korea Hanson had to make extensive additions to its plant capacity to keep up with the demand for its fine quality equipment. In a word, Hanson is one of America's outstanding smaller companies engaged in the manufacture of excavators and cranes.

Yet with all this—and all through the years from 1914 when the firm was founded—Hanson has tended to hide its light under a bushel. Its conservative, engineering minded management has concentrated on building a better mousetrap and has done very little shouting from the house tops. Though known and respected, Hanson is not as well known as it could be.

Or will be. For Hanson has acquired new owners and new managers

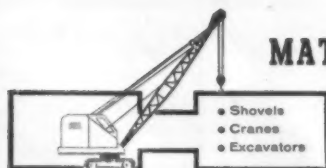


EXCAVATORS

Crawler, rubber and truck mounted; ¾ to 1 yard shovels; 5 to 25 ton cranes.

YARD and DOCK CRANES

Mechanical and hydraulic. 3, 5 and 6 ton.



who are firm believers that in this competitive day and age it pays to advertise. Henceforth Hanson will not only build the finest excavators and cranes that money can buy but will tell the world so. Henceforth you can expect to see regular messages in this and other magazines telling the Hanson story. We're proud of Hanson, proud of Hanson machines, too proud to have anyone ask, "Who's Hanson?"

Look for us in Philadelphia, May 9, 10 and 11

at the **EASTERN STATES**
MATERIALS HANDLING EXPOSITION

HANSON MACHINERY CO.
TIFFIN, OHIO

For more facts, use Request Card at page 18 and circle No. 288

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INERS



This shows two of the four precast-concrete arches, spanning 42 feet, which are tied together with steel bars to form the cage for a Siberian tiger. The cage is unheated even during the winter months.

reinforcing steel, workmen place a perforated sheet-metal backing called Truss-Loop. Then they wire a 2 x 2-inch wire mesh to the outside of the reinforcing steel.

Now the irregular surface is ready for the mortar. A mixture of torpedo sand, cement, and water is applied pneumatically to a depth of three inches. To give the surface the appearance of natural granite, it is topped with a special 1/2-inch finish coat. This is a mixture of reddish Montello granite, white Waterloo quartzite, and Medusa cement. The fine-grained mixture is also sprayed in place. The color of the final surface is controlled by washing it down with muriatic acid. Washing with the acid exposes more of the Montello granite, giving the surface a redder hue. Additional treatment will be given to this surface by using chemicals and dyes to simulate natural weathering and algae growths.

THE END

Oklahoma '61 road map

■ The Oklahoma 1961 road map has been released by the Oklahoma State Highway Commission, Oklahoma City, Okla.

The map clearly shows paved, gravel, and soil-surfaced roads, as well as interstate projected routes. It includes a key to place names and locations; a table giving mileages from center to center of towns; illustrations of traffic signs; points of interest; and a list of facilities at State parks and lodges.

Included with the map is a folder on highway statistics, outlining Oklahoma's 10-year improvement plan. Both may be obtained free of charge from the state highway department, Capitol Office Bldg., Oklahoma City 5, Okla.

Airco promotes

■ F. N. Zabriskie is the new assistant manager of sales for the midwestern region of Air Reduction Sales Co., New York, N. Y. He will coordinate sales of industrial gases and equipment in a region consisting of the districts of Chicago, St. Louis, Milwaukee, Minneapolis, Davenport, Kansas City, and Detroit.

Austin forms new firms in Australia, Argentina

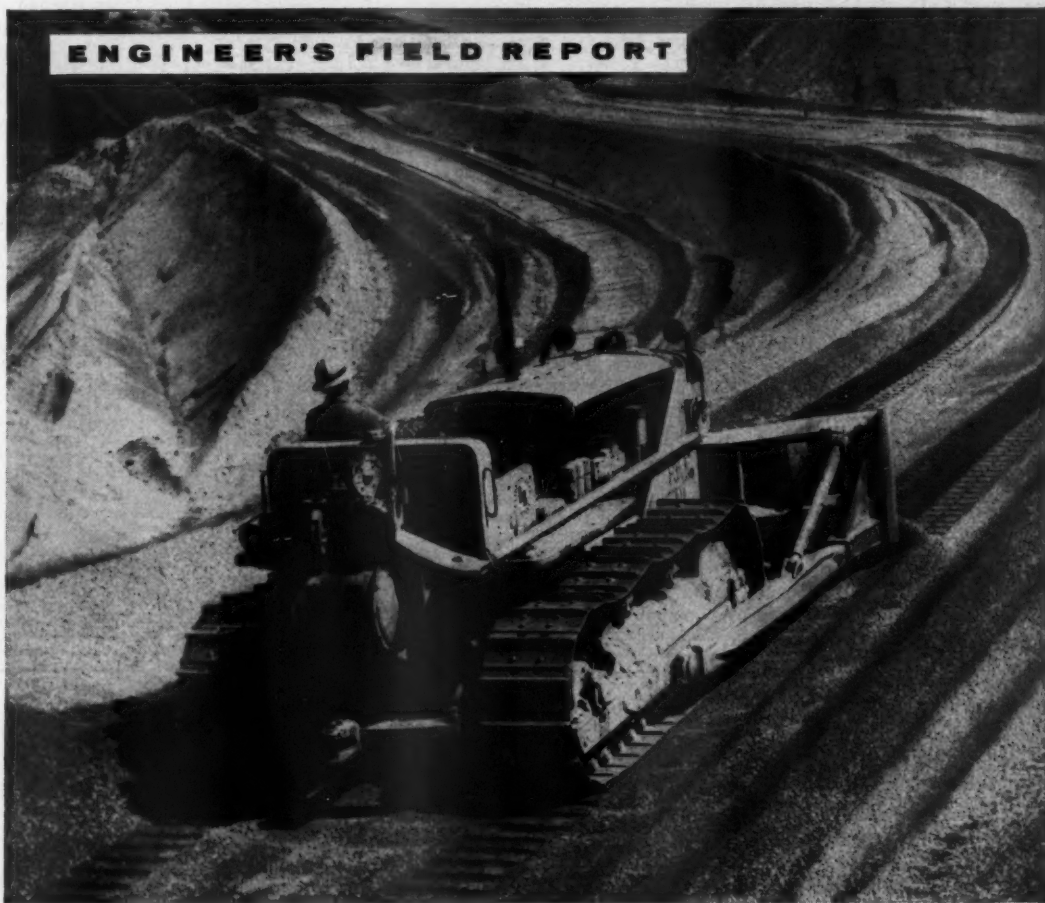
■ The Austin Co., international engineering and construction firm of Cleveland, Ohio, has announced the formation of two new firms: Austin-Anderson Pty. Ltd., Sydney, Australia, and Austin-Graziani S. A., with headquarters in Buenos Aires, Argentina.

The new companies, which are jointly owned by Austin and established Australian and Argentinian engineering-builder organizations, will provide American companies interested in those countries with a complete range of design, engineering, construction, and consulting services.

Managing director of Austin-Anderson will be A. J. Anderson, founder

and managing director of A. J. Anderson (Australia) Pty. Ltd., industrial building specialists. Chairman of the board of directors is Charles J. Groux.

Cyril F. Prideaux will serve as executive vice president and general manager of Austin-Graziani S. A. He has been president of Austin's Brazilian company since 1954. Luis J. Graziani, one of the principals of Luis R. Graziani e Hijos S. R. L., an Argentinian design and construction firm, is president of Austin-Graziani. His brother Rafael, will serve as vice president. Douglas Castleman has been appointed vice president and auditor of the firm.



No lost time—No replacement parts with RPM Tractor Roller Lubricant!

Tractor equipment of Gibbons & Reed Construction Co., Salt Lake City, operates in extreme heat, cold, dust and moisture. Yet, despite severe working conditions, track rollers and bearings have given remarkable service using RPM Tractor Roller Lubricant.

"We've used 'RPM' for over 10 years," reports Master Mechanic Harold Higgins. "... it has done a fine job, and we've definitely saved on replacement parts. This lubricant seals out dust and moisture to keep bushings in good shape.

We use RPM Tractor Roller Lubricant on over 60 pieces of heavy construction equipment."

Gibbons & Reed is one of Utah's top general contractors with construction jobs throughout Western states. Their maintenance policies are the result of over 25 years field experience. As Harold Higgins says: "You can't meet schedules when equipment is down... that's why we rely on 'RPM' to help keep 'em rolling!"

RPM Tractor Roller Lubricant resist wear because it flows evenly to all bearing surfaces, lubricates and retards rust formation. Its special compounds create a tough, wear-resistant film that seals out moisture and dirt.

Why not try RPM Tractor Roller Lubricant? Chances are it can help reduce down time, lengthen equipment life for you. Just call your local representative or write any company listed below:



STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • STANDARD OIL COMPANY OF TEXAS, El Paso
CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey - Denver, Colorado

TRADEMARK "RPM" AND CHEVRON DESIGN REG. U.S. PAT. OFF.

For more facts, use Request Card at page 18 and circle No. 292



Distributor Doings

Power Parade shows off new A-C units

A Power Parade of Allis-Chalmers equipment—from small crawler tractor to an experimental dual-engine motor scraper not yet in production—was shown to dealers, contractors, and the press at the firm's Springfield, Ill., plant during the last weeks in March. In and around the one-eighth-mile-long tent were A-C's complete line, including such new rigs as a TL-30 tractor loader, the largest in the line; a 145-T medium-weight motor grader; and new models of the HD-21 tractor and TS-160 scraper.

A Power Parade of new and current construction rigs produced by Allis-Chalmers Mfg. Co., Milwaukee, was demonstrated to a grandstand audience of dealer representatives, from 182 U. S. and Canadian cities, and the press in Springfield, Ill., a month ago.

Approximately 1,000 persons were at A-C's Springfield plant to see more than 50 units, ranging in size from 6,000 to 75,000 pounds, put through their paces. Included were new models of crawler tractors, tractor shovels, tractor loaders, motor graders, and motor scrapers made by Allis-Chalmers.

An experimental earthmoving machine, a dual-engine motor scraper with almost 700 horsepower and the capacity to move 40 cubic yards of dirt a load, was previewed at the display. The giant machine is expected to be in production by Allis-Chalmers later this year.

New rigs

Major new models introduced included: an HD-21G tractor shovel designed for steel-mill slag-removal operations; a medium-sized, 105-hp Model 145-T motor grader; a TL-30 tractor loader with 25,000-pound lifting capacity; and a new TS-160 motor scraper with a carrying capacity of 13 tons.

Also featured were a redesigned HD-21 crawler tractor, the biggest in the A-C line; the new compact crawler-tractor series—the H-3 gasoline and HD-3 diesel-powered units, both in the 40-hp class; an HD-6 small crawler tractor now offered with an optional oil master clutch; the 1961 model of the TS-360 motor scraper with a dirt-moving capacity of 30 cubic yards heaped; and an optional TS-360 unit featuring an independent apron design.

Equipment display

Units of A-C's complete machinery line were also on view for closer inspection in a tent one-eighth mile long. The company also conducted a tour of its new service training center, and gave a special display illustrating an application of the fuel-cell power theory pioneered by Allis-Chalmers, in which a model train operates from the electrical energy created by the experimental power source.

THE END

CONTRACTORS AND ENGINEERS

PROBLEM: BREAKING FROZEN TOP-SOIL!

SOLUTIONS:

DRILLING & BLASTING	RIPPING
LABOR\$ 504.36	LABOR ...\$19.56
EQUIPMENT.....321.60	*EQUIPMENT..168.00
EXPLOSIVES...725.00	
\$1550.96	\$187.56

**CAN YOU AFFORD
TO PAY 827% MORE?**

*EQUIPMENT

A Cat D9 Tractor with extra heavy-duty Kelley Ripper—breaks solid rock, frozen materials, coal into easily handled pieces at a cost that's 15 to 85% less than drilling-blasting... massive hydraulic cylinders keep 3½" thick shank at any desired depth to 84".

Data from actual job report where both solutions were used in the same materials, same area. Location of this and other money-saving applications of the Kelley Ripper can be obtained at your Caterpillar Dealer.



Kelley Rippers are sold only by your Caterpillar Dealer

KELLEY RIPPER



CRC

A division of
Crutcher-Rolls-Cummings, Inc.
Houston, Texas

Caterpillar, Cat and Tractor are Registered Trademarks of Caterpillar Tractor Co.

Woman's touch: firm's answer to collections

Contractors and Engineers staff article

With contractors in a financial squeeze between higher job costs and lower bid prices, it is often a problem to collect money from them. They are likely to put off paying their bills in order to meet their payrolls. This can get to be a habit that is neither good for the contractor nor to the liking of the distributor.

In a time when most dealers are having trouble with collections, Eldon M. Farnum feels that his company has the problem pretty well licked. In doing about \$4 million worth of business over the last two years, Allied Construction Equipment Co. of St. Louis has lost less than \$800 in bad debts—an impressive record according to any business standards.

Several years ago, the company decided to strengthen its collection policies. At that time, collections were left up to management in general and nobody in particular. Top management and salesmen spent a lot of time in conference trying to decide which contractors to carry and which ones to lower the boom on. There was a lot of talk and not much action—effective action, that is.

A friendly persuader

To eliminate the confusion, Farnum appointed one person to be directly responsible for collections. She is Mrs. Mary E. Kelley, long-time company employee and wife of the secretary-treasurer. As credit manager, she keeps records of the financial status of most of the customers. She also keeps a sharp eye on all accounts receivable. Three-quarters of her time is spent on collections.

A kindly yet persistent woman, she is the company's friendly persuader. When a bill becomes past due, she's on the phone immediately talking to the "top brass" of the construction company and reminding them of the "oversight." Her voice is pleasant but firm.

Part of the time she's writing letters with her own personal touch reminding contractors of their obligations. She makes it a point to know about a contractor's work schedule and the most convenient time for him to make a payment. She treats each contractor as an individual, and she tries to give as much consideration to a small operator as she does to a big contractor.

Before making major decisions on delinquent accounts, she consults with Farnum. These meetings occur frequently—sometimes as often as once a week. About every 30 days, Farnum

(Continued on next page)

Mary Kelley and Eldon Farnum, president of Allied Construction Equipment Co., St. Louis, go over delinquent accounts.



You'll stay ahead when the "Chief" leads the way!

Extra surface rolled every hour—that's one of the proved advantages when you operate the Galion "Chief" pictured above. Size for size it gets more done—faster—than other rollers of its type.

Its rugged design increases your rolling efficiency tremendously. Power-to-spare engine, hydraulic steering, fingertip control and Roll-O-Matic Drive result in better compaction with a smoother surface.

Take Roll-O-Matic Drive, for example, which applies power automatically. This one Galion feature alone promises at least 10% more surface rolled in any given time, under any terrain conditions, up grades or down.

For complete information contact your Galion distributor or write for Bulletin 410-A.



RENT A ROLLER
Ask your Galion distributor about our cost-cutting Rent-A-Roller Plan.

THE GALION IRON WORKS & MFG. COMPANY, GALION, OHIO, U.S.A.
General and Export Offices, Galion, Ohio, U.S.A.—Cable Address, GALIONIRON, Galion, Ohio

For more facts, use Request Card at page 18 and circle No. 294

distributor doings



Charming but persuasive, Mary Kelley reminds a customer of an "oversight."

(Continued from preceding page)

and Mrs. Kelley get together and look over all the accounts.

Although each customer's case is treated individually, certain collection policies are generally observed. After a bill is 30 days overdue, the contractor gets a reminder. After 60 days, he gets a bit more prompting in the form of letters and telephone calls. From 90 to 120 days, management and the credit department consult as to what action to take.

Mortgaged equipment

If it's a bill of sizable proportions, Farnum may suggest to the contractor that he mortgage a piece of his equipment. Allied Construction Equipment Co. then receives payment of the bill from the mortgaged value of the equipment. The contractor makes monthly payments to the bank over the course of a year to pay off the mortgage. The bank handles the paper at 6 per cent interest, but the dealer endorses the mortgage. If the contractor doesn't meet his obligations to the bank, the dealer must pay up. In this event, however, the dealer gets the mortgaged piece of equipment—the value of which is equal to and in many cases more than the mortgage.

So far, Farnum has never had to reclaim a mortgaged piece of equipment. In fact, he says that contractors welcome this method of payment as a constructive suggestion.

"You can catch more flies with honey than you can with vinegar," is the principle of Farnum's collection policy. He seldom uses a threat to make a collection.

"We have had no success with charging interest on overdue accounts," says Farnum. "We have tried it several times, but we have only aggravated the customer rather than prompted him to pay. In some cases, we've lost both the money and the customer."

Allied Construction Equipment Co. is a well knit organization that does about \$2 million worth of business a year. Its nine salesmen sell to building and highway contractors, mining firms, public bodies, and industrial plants. Although the company does not carry a tractor-scraper line, it represents some 60 manufacturers of

construction equipment. These include Barber-Greene, Clyde Iron Works, Koehring, Gorman-Rupp, Owen Bucket, Parsons Co., Kwik-Mix, Etnyre, Buffalo-Springfield, Wisconsin Motor, and Delmag, among others.

Eldon Farnum, president of the 28-year-old company, is well known to many members of the Associated Equipment Distributors. He is currently director of Region 9 and has served a 4-year term as treasurer.

"In a way," he says, "credit and collections are really a matter of good salesmanship. You must consider the interests of the contractor. You must use diplomacy. You must sell him on the idea that it is in his own interests to pay his bills promptly."

THE END

Koehring distributors

Southern Equipment & Tractor Co., Inc., with offices in Monroe, New Orleans, Shreveport, and Baton Rouge, La., is the new distributor for Louisiana and adjoining counties in Arkansas for the Koehring, C. S. Johnson, and Parsons divisions of the Koehring Co., Milwaukee, Wis. It has been a distributor for Buffalo-Springfield Co., another Koehring division, for some time.

The dealer will handle the complete line of Koehring crane-excavators, paving equipment, and off-road hauling units; C. S. Johnson batching plants, clamshell and concrete buckets, electronic controls for automatic batch plants and concrete pipe and block plants, and Koehring-

Johnson construction mixers; and the Parsons line of wheel and ladder-type trenchers. It will continue to sell and service Buffalo-Springfield rolling and compaction equipment.

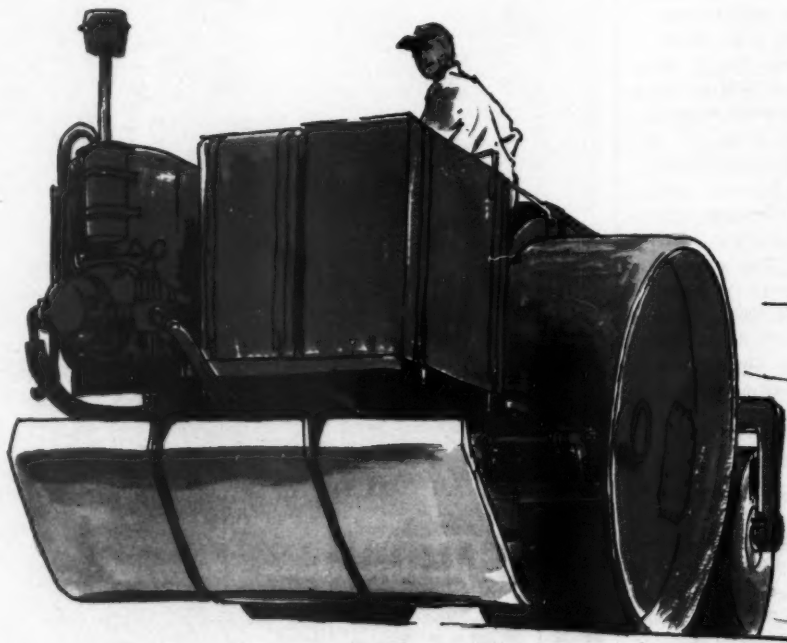
Brown-Fogle Equipment Co., 3831 Alameda Rd., Houston, Texas, a subsidiary of Southern Equipment, was appointed by these divisions a distributor for southeastern Texas.

Allis-Chalmers dealers

The Industries Group of Allis-Chalmers Mfg. Co., Milwaukee, Wis., has appointed Cal-Ore Machinery Co., Inc., 1105 Court St., Medford, Ore., and Power Pumps, Inc., 2400 Cherry Ave., Long Beach, Calif., as distributors.

Cal-Ore will handle A-C motors,

AUSTIN-WESTERN PRODUCTS SAVE TIME AND MONEY



A-W ROLLERS FINISH TOUGH-SPEC COMPACTION JOBS EASY AS 1-2-3

And they do it by any of three compacting methods—static, vibratory and pneumatic. Take this asphalt surface job as an example. First, the variable weight 3-wheel makes the initial breakdown pass with its heavy steel-wheel static pressure. Second, the new PR-11 9-wheel, 4 to 11-ton pneumatic tired roller performs the intermediate stage with a kneading action which simulates heavy traffic loads and reduces voids to approximately 3%. Third, the 2-wheel A-W tandem roller, again with variable weight, wraps up the whole job and leaves a smooth-as-glass finish. The granular subbase was compacted by the Austin-Western Roller Compactor, which uses a combination of both static and vibratory compaction for simultaneous surface sealing and low-level keying of voids.

Whatever your compaction job, there is an A-W unit to help you meet the toughest specs, today's and tomorrow's, in fewer passes. They are top-quality machines built to outperform and designed for easy maintenance—two of the reasons Austin-Westerns save you time and money!

vacuum pumps and accessories, and rotary compressors in Oregon, five counties in Washington, and three counties in California.

Power Pumps will distribute the company's motors and generators, pumps, and compressors in all of Kern and Los Angeles counties in California.

Buffalo-Springfield adds distributor

Buffalo-Springfield Co., a division of Koehring Co., Springfield, Ohio, has appointed Mountain Tractor Co., 1345 W. Broadway, Missoula, Mont., a distributor for its complete line of compaction equipment. This includes 7 and 9-wheel pneumatic-tire rollers, 2 and 3-axle tandem rollers, 3-wheel

rollers, and the 4-wheel Kompactor.

The new dealer will cover western Montana.

Yale & Towne dealer news

The Yale & Towne Mfg. Co., New York, N. Y., has appointed J. C. Georg Construction Equipment, Inc., 2237 Central Ave., Schenectady, N. Y., and Hudson Valley Equipment Co., 238 Ulster Ave., Saugerties, N. Y., distributors for its Trojan tractor-shovel line in several counties of upstate New York.

George Malvese & Co., Inc., the present Trojan distributor on Long Island at 530 Old Country Road, Hicksville, will also represent the Trojan Division in New York City and Westchester County.

Acme Iron dealers

Acme Iron Works, San Antonio, Texas, has appointed two new distributors for its complete Ingram roller line, including 3-wheel, tandem, and self-propelled pneumatic rollers.

Cummings, McGowan & West, Inc., St. Louis, Mo., will cover eastern Missouri and southern Illinois. West Virginia Tractor & Equipment Co., Charleston, W. Va., will cover that state with the exception of the panhandle counties.

Sales representative named by H. O. Penn

Raymond W. Lawton, Jr., has been appointed sales representative in Nassau County, N. Y., for the H. O.

Penn Machinery Co., Inc., New York City. He succeeds Louis J. Alexander, who has resigned.

Lawton formerly was with the Perkins Machinery Co., at Springfield, Mass., and also served as general-line salesman for Wilhelm-Davies Co., Wallingford, Conn., and branch manager in Hartford.

New distributor group elects slate of officers

The newly formed Florida Equipment Distributors Association elected officers for 1961-62 at a recent meeting at the Americana Hotel in Miami Beach.

President of the association is Neil Finn, Finn Machinery Co., Miami; vice president, Ken Herold, Highway Equipment & Supply, Orlando; secretary, Martin Meyer, Blanchard Machinery, Inc., North Miami; and treasurer, Don Dyble, General Engine & Equipment Co., Tampa.

Directors elected were: Miami Chapter, Bill Burke, Allied Equipment, Inc.; Tampa Chapter, Jim Goggin, Neff Machinery, Inc.; Orlando Chapter, Long DeBruyncope, Joseph L. Rozier Co.; Jacksonville Chapter, Max Moody, M. D. Moody & Sons, Inc. Scott Linder, Linder Industrial Machinery Co., past president, is an ex officio member of the board of directors.

Permanent executive secretary at Jacksonville Beach headquarters is George H. Rumpel.

Harnischfeger appoints three new distributors

Harnischfeger Corp., Milwaukee, Wis., has named three new distributors to handle its complete line of P&H crawler and rubber-tire power cranes and shovels and P&H soil stabilizers.

The Harris Euclid firm, 3900 N. Cliff Ave., Sioux Falls, S. Dak., will cover the state of South Dakota. The company has a branch office in Rapid City at Deadwood Ave. and Interstate 90.

Construction Machinery Co., 2601 Second St. N. W., Albuquerque, N. Mex., will cover New Mexico with the exception of seven southern counties.

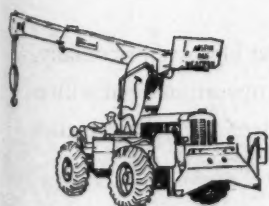
Copper State Tractor, Inc., 407 S. 17th Ave., Phoenix, Ariz., will handle the entire state of Arizona.

Kwik-Mix names dealer

The Kwik-Mix Co., Port Washington, Wis., has appointed Chesapeake Supply & Equipment Co., 1211 E. 25th St., Baltimore, Md., a distributor for Maryland, the District of Columbia, and parts of Virginia and Delaware.

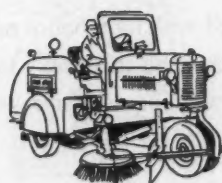
The new dealer will handle sales and service on the complete line of Kwik-Mix equipment including tilting and nontilting bituminous mixers, plaster and mortar mixers, Moto-Bug material handlers, and Hi-Lifter 4-wheel-drive fork trucks.

Chesapeake has branches at 4726 Baltimore Ave., Hyattsville, Md., and at Mary and Peir Sts., Dover, Del.



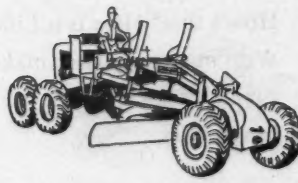
A-W HYDRAULIC CRANES

5 models. Capacities to 11 tons. Self-propelled and truck or stationary mounting. "Live" hydraulic booms extend up to 48 ft. on some models.



A-W MOTOR SWEEPERS

2 models: 2-yd. Model 40; 4-plus Model 60. Safe, easy front steer; full visibility. Simplified design; broom and hopper in rear.



A-W POWER GRADERS

9 models; all-wheel drive and steer 4-wheel Pacers and 6-wheel Supers. Weight classifications to 30,000 lb., power ranges to 165 hp.

Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
BALDWIN · LIMA · HAMILTON

For more facts, use Request Card at page 18 and circle No. 295



Contractor re-uses forming on five similar bridges
to take advantage of savings made possible by

Progressive construction and

Contractors and Engineers staff article

Five bridges built last season in Butte, Mont., provide for interchanges between four streets and the new alignment of Interstate I-90 through the city. The decks of the structures are carried on 98 precast, prestressed-concrete girders that were trucked some 200 miles to the job.

A Michigan truck crane with 50-foot boom and 25-foot jib places a girder on piers for a bridge that will carry a Butte, Mont., street over a freeway.



Bausch & Lomb presents photogrammetric awards

Bausch & Lomb, Inc., Rochester, N. Y., presented its Photogrammetric Awards to students at the 27th annual meeting of the American Society of Photogrammetry, held recently in Washington, D. C.

This year the society made one B&L award for the best paper submitted by a graduate student and a second for the top paper by an undergraduate. William Howard Espey, Jr., received the graduate prize for his paper, "The Profile of the Nappe as Determined by Photogrammetry." Espey is a part-time instructor and graduate student in the Civil Engineering Department at the University of Texas. Pablo Larrea, a senior in the School of Civil Engineering, Cornell University, was awarded the undergraduate prize for his paper: "Design of a System for Photogrammetric Measurements of Small Angular Changes."

Each award consists of a \$100 prize and a 3-year paid-up membership in the society.

U. S. Steel appoints

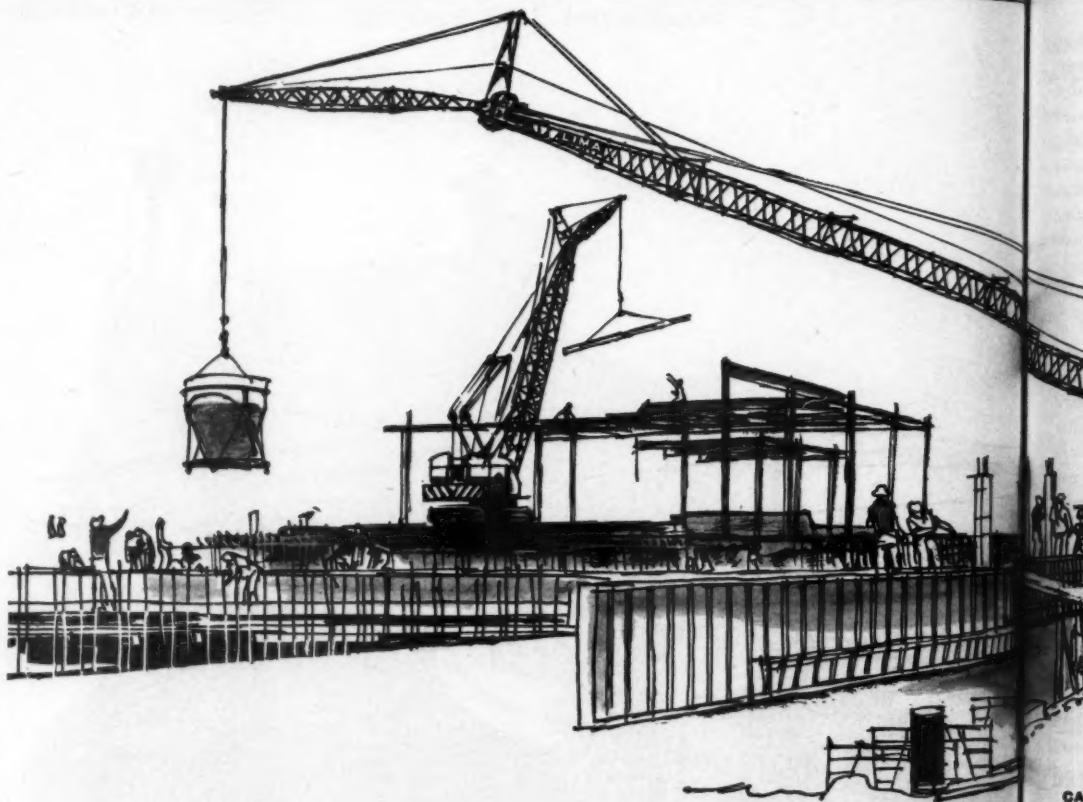
United States Steel Corp., New York, N. Y., has appointed Dr. Gayton E. Germane director of transportation planning and research in the organization's Traffic Division at Pittsburgh.

Germane was formerly professor of transportation and management, at the Stanford University Graduate School of Business.

Shunk acquired by Chromalloy

Shunk Mfg. Co., Bucyrus, Ohio, manufacturer of replaceable blades and cutting edges for earthmoving, road-construction, road-maintenance, and snowplow equipment, has been acquired by the Chromalloy Corp., New York, N. Y., a company specializing in the development and production of diffusion metal coatings and alloys.

Shunk will be operated as a wholly owned subsidiary of Chromalloy with Raymond W. Burman as president.



TALK ABOUT A BOARDING HOUSE REACH...

How's this? Here is a Lima equipped with long boom reaching out almost horizontally. With most any other make truck crane this is a tricky low-boom operation—but with a Lima it's an example of strength without excessive weight and of high-performance capabilities.

Like all Limas, the truck cranes are more useful and profitable because they can be counted on to stay on the job without excessive downtime and costly repairs. They're the best you can buy. Lima accepts undivided responsibility for both crane and carrier. Booms can be raised from horizontal without assistance; unit easily strips to legal load limits for rapid transport. Choices of carrier drives and power plants. Interchangeable front ends.

Why not ask your nearest Lima distributor today for facts, figures and a demonstration of the Lima type and size best for you—or write to us here in Lima.

4109

The prestressed girders made things easier for the contractor when work was done on twin structures carrying an interstate route over a busy local thoroughfare, for the girders could be set with a minimum of interference to traffic. These structures are each 209.5 feet long.

and prestressed girders

The Cahill-Mooney Construction Co. of Butte built the structures under a \$346,000 contract with the Montana State Highway Commission. Careful coordination enabled the contractor's crews to save time and money by working on several of the structures simultaneously. This also made it possible to finish all of them in a period of less than eight months.

In addition to the 96 prestressed girders, which range in length from 40 to 60 feet, the structures required the furnishing and placing of 10,758 linear feet of treated timber piling, 2,000 cubic yards of concrete, 302,759 pounds of reinforcing steel, and 2,169 linear feet of bridge railing. The combined lengths of the bridges total 1,077.5 feet.

Cahill-Mooney started work on the most westerly of the structures, located at Oregon Avenue, and then moved each operation from one site to the next as the work progressed. The work started with the driving of

the piling, which was handled by a Michigan 25-ton truck crane using a drop hammer and leads built in the contractor's shops. The piles were driven from 15 to 32 feet.

Column forms are re-used

To cast the heavy pier columns, the contractor built three rugged sets of forms that were re-used on the 25 piers of the five bridges and emerged in good enough shape for many more re-uses. The side panels consisted of 4 x 6 horizontal joists with vertical 2 x 4's placed 4 inches apart. The lining of 3/4-inch plywood was attached to the 2 x 4's. The 4 x 6 joists extended over both sides of the panel and were staggered so that they interlocked when adjacent sides were set together. When the forms were set up, four lengths of 4-inch pipe were placed between the projecting joists in the corners. Half-inch cables were wrapped around the outside of these pipes and tightened with a come-along. These forms were quickly set and stripped, left no holes in the concrete to be patched, and were rugged enough to withstand many re-uses.

The pier caps were formed with conventional timber framing and plywood lining and were tied through with rods. The soffit forms were supported on steel scaffolding.

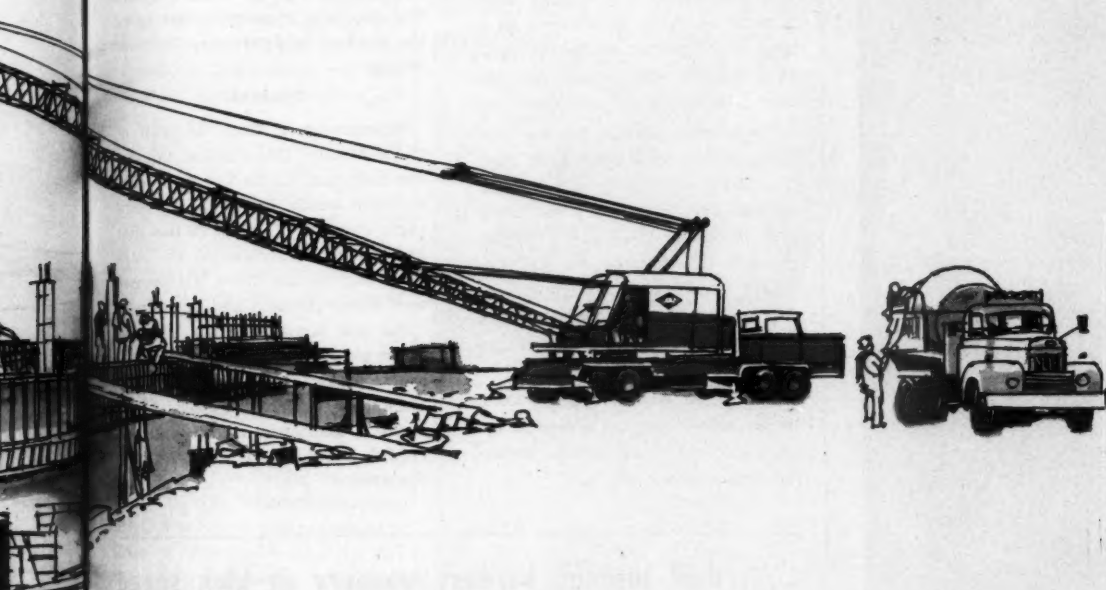
Girders trucked 200 miles

The prestressed-concrete girders were made by the Ready to Pour Concrete Co., Idaho Falls, Idaho, some 200 miles from Butte. The AASHO-type girders were all 42 inches deep. The reinforcing was varied to accommodate the several different span lengths.

The 60-foot girders, of which there were 44, contained 18 pretensioned 3/4-inch strands in the lower flange and 4 similar strands in the top. These strands ran straight through from end to end. In addition, there were three cables in the webs, each containing 18 wires 0.196 inch in diameter. Two of these cables were draped down in the center and up at the ends. The third extended straight through. The wires of these three cables were post-tensioned by the Freyssinet system at the manufacturer's plant after the concrete had attained the desired strength.

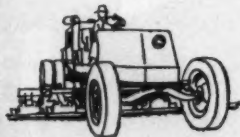
Truck-trailer rigs delivered the girders from the plant to the job site two at a time. The Michigan truck crane, sometimes aided by a GMC hoist truck, picked the girders off the trailers and set them directly

THE USEFULNESS OF A LIMA

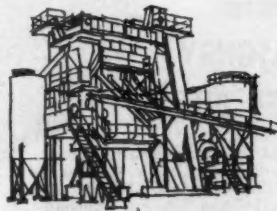


CAPACITIES

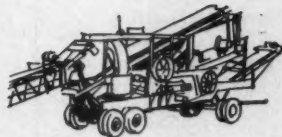
TRUCK CRANES—20 to 80 tons, boom-jib combinations to 250 ft.
WAGON CRANES—20 to 75 tons
CRAWLER CRANES—15 to 140 tons
CRAWLER MOUNTED SHOVELS—3/4 to 8 cu. yd.
CRAWLER MOUNTED PULLSHOVELS—to 4 1/2 cu. yd.



LIMA MODEL D ROADPACKER—Six vibrating shoes consolidate fast, deep for profitable single-course construction; available in 12-shoe Super model.



LIMA MADSEN ASPHALT PLANTS—available in models with batching capacities from 1000 to 10,000 lb.



LIMA AUSTIN-WESTERN portable and stationary crushing, screening and washing equipment; including jaw crushers, feeders, screens, elevators, conveyors, bins.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division • Lima, Ohio
BALDWIN • LIMA • HAMILTON



For more facts, use Request Card at page 18 and circle No. 296



Once prestressed girders have been set, pressed-steel form hangers are slipped over the top girder flanges to support double 2 x 6 joists that span between girders to carry deck forms. These are of 3/4-inch plywood backed by 2 x 4's. Brackets hung from outer girders support the overhanging portion of the deck.



The Syro Steel Company, a long established manufacturer of highway products, NOW offers a complete line of sectional corrugated structures for heavy-duty drainage requirements. ...Years of experience in the manufacture of highway products result in sectional plate structures designed for easier, cost-saving field erection. The wide range of available gauges and sizes permits economical selection for any fill height and loading condition. Hot dip galvanizing assures long life...structures last indefinitely under average conditions.

For economy, strength and permanence in drainage structures...choose Syro Structural Plate.

(Syro Structural Plate meets specifications of all State Highway Departments, U.S. Corps of Engineers, Bureau of Public Roads and all other specifications based on AASHTO Designation M167-57.)



OTHER MAJOR PRODUCTS IN THE SYRO QUALITY LINE

STEEL BEAM GUARD RAIL
"ZEE" POSTS "H" POSTS
JET BLAST DEFLECTORS

SYRO STEEL CO., IRARD, OHIO

WRITE, WIRE, PHONE FOR FURTHER INFORMATION

For more facts, use Request Card at page 18 and circle No. 297

(Continued from preceding page)

in place on the piers.

All of the operations progressed in an orderly manner from one structure to another. As the piers were completed on one structure, the forms were moved along to the next location. Almost immediately the girders began arriving by truck, and construction of the deck forms followed closely. This sequence of operations gave the Michigan truck crane a good workout as it dashed back and forth from one site to the other to drive piling, set forms, hoist concrete, set the prestressed girders, etc. A smaller Link-Belt crawler crane helped out with some of the lighter work.

Forms for the cast-in-place concrete deck slab were suspended from the top flanges of the prestressed girders on pressed-steel hangers furnished by Madden Construction Supply Co., Inc., Billings. These hangers supported double 2 x 6 stringers, which carried the 2 x 4 joists and 3/4-inch plywood decking. The contractor used enough deck forming to form three spans at a time. Practically all of the materials were salvaged and re-used over and over until the job was completed.

The concrete for the job was supplied by Pioneer Concrete & Fuel, Inc., Butte, and delivered in transit mixers. The Michigan truck crane with 50 feet of boom and a 25-foot jib was able to spot the Gar-Bro 1-yard bucket at any point on the deck of any of the structures. Thus, it was not necessary to wheel any of the deck concrete.

The decks were screeded with a timber screed carrying a mechanical vibrator. A minimum of hand finishing was required.

For more facts on insert, use Request Card at page 18 and circle No. 299



Deck concrete is cast for the Lexington Street structure from a Gar-Bro 1-yard bucket that is handled by the 25-ton truck crane.

Since the grading is to be done under separate contracts this year, the structures look strangely isolated with no approach grades and, in some cases, no roadways under them. Three of the structures carry local streets over the freeway. The other two are twin structures that carry the freeway roadways over Harrison Avenue.

Personnel

Superintendent Don Stanisich of Cahill-Mooney Construction Co. was one busy man during the entire construction season. He always had work going on at a minimum of two sites and had to keep planning the work in advance for the others. His foremen were Victor Johnson and Bus Carver.

For the Montana State Highway Commission, John F. McCarthy served as resident engineer and Loren Matkin as project engineer. A. W. Jones is Montana's bridge engineer. Fred Quinnell, Jr., is state highway engineer.

THE END

... drill through hardest masonry at high speed
Reduce Job Costs with ...

HOFFMAN

**Diamond
MASONRY
CORE BITS**

Drill right through hardest reinforced concrete, tile, asphalt, etc. Cut holes to exact size on first pass. From 1/2" to 14" dia. Hoffman Bits are Diamond Impregnated or Surface Set ... fit any machine ... assure fast, easy installation of conduit, piping, air-conditioning units, etc.



Hoffman Bits drill 1" to 2" deep per minute on modern equipment like this new "Roto-Kor" Drilling Machine.

Kor-It Model 600 Machine swivels full 360° for any angle drilling of 1" to 5 1/2" dia. holes.

Write for Literature and Prices—FREE. Ask for Information on Hoffman Diamond Segmented Circular Saws for cutting concrete, granite, etc.

HOFFMAN BROS. DRILLING CO.
BOX 426, PUNXSUTAWNEY, PA.

For more facts, use Request Card at page 18 and circle No. 298

CONTRACTORS AND ENGINEERS

Johns-Manville to sell line of gypsum products

Johns-Manville Corp., New York, N. Y., has made an agreement with Best-wall Gypsum Co. and Certain-teed Products Corp. whereby J-M will market a complete line of gypsum wallboard and plaster building materials.

All of the wallboards and most of the base-coat plasters will be reinforced with fiberglass. In addition to the regular wallboards, a line of pre-finished woodgrains and another line of vinyl-faced wallboard will be available in six colors.

A special product called Firetard, rated by Underwriters' Laboratories for fire protection of one hour when applied in a single 3/8-inch layer over either wood or metal framing, will also be offered by J-M.

Reed division of SKF to have new plant

Construction of a new \$2.5 million plant for the Reed Instrument Bearing Co.—a division of SKF Industries, Inc., manufacturer of ball and roller bearings—is under way in Los Angeles. The 1-story facility, scheduled for completion this summer, will have about 35,000 square feet of office and production space.

The new plant will contain the most modern type of "White Room"—a room-within-a-room, housing exacting temperature, humidity, and air-pressure controls (for optimum cleanliness and measurement controls.) Reed is a major supplier of miniature bearings.

Ramset appointments

Elbert R. Faust and F. Morgan Taylor, Jr., have been named plant manager and marketing manager, respectively, of Ramset Fastening System, New Haven, Conn. Ramset is a part of Winchester-Western Division, Olin Mathieson Chemical Corp.

Faust comes to the firm with more than 15 years' experience in the fastening field. Taylor has been Ramset plant manager since 1958.

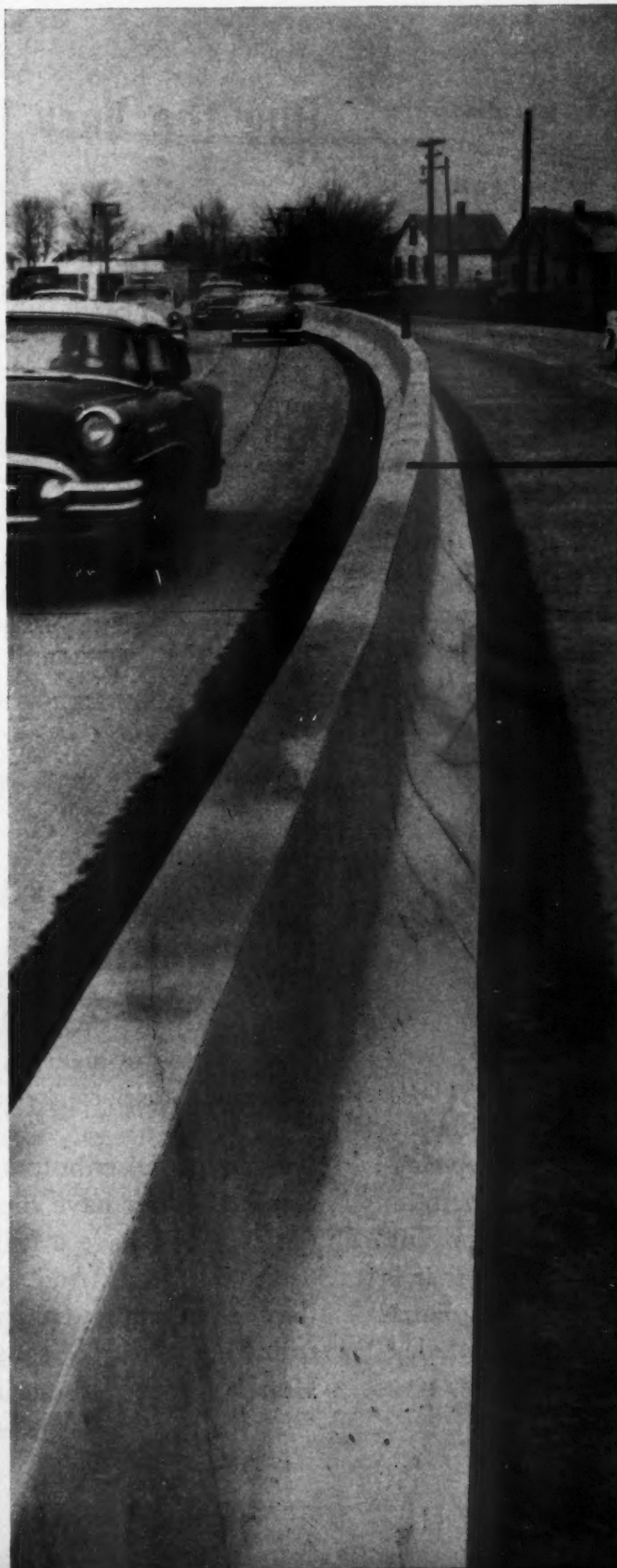
Owen Bucket appointments

Frank J. Szabo has been appointed comptroller of The Owen Bucket Co., Cleveland, Ohio, and has also been made secretary-treasurer of Clamshell Bucket Sales Corp. and Owen Clamshell Warehouse Corp., Owen subsidiaries located in New York City. He will retain his position of credit manager of the parent company.

W. H. Botten has been appointed vice president and treasurer of Owen Bucket. He formerly served in various production and sales capacities.

The new secretary of the company is William F. Marsteller, Jr. Marsteller will also serve as manager of the export department, while retaining his position as advertising manager.

LONG-RANGE REACH is effectively used by this Model 620 Econmobile, equipped with crane hook and concrete bucket, in work on a school job in Salt Lake City. Made by the American Road Equipment Co., Omaha, Nebr., the machine can project its tower forward some 15 feet at a height of some 27 feet.



Unretouched photo of concrete barrier taken last spring following a severe winter.



White concrete center barriers: new safety for existing roads

This concrete center barrier on Route U.S. 46, New Jersey, has been successful in preventing head-on collisions on this heavily traveled approach to the George Washington Bridge. Cast in place with ATLAS WHITE portland cement, the barrier is 32 inches high, 24 inches wide at the base, with sloping sides. This design minimizes the possibility of vehicles mounting the barrier and helps shield oncoming headlights. This construction has become an important feature in New Jersey's program to build safety into existing highways where the installation of center islands is impractical.

ATLAS WHITE air-entraining portland cement was specified for the concrete in this installation because its uniform whiteness provided contrast between barrier and the darker pavement. And at night, this contrast is even more apparent. In addition, the air-entraining property of this cement also provides a more durable concrete that resists the destructive effects of freezing-thawing weather and the application of de-icing salts. For more information on white portland cement, write Universal Atlas, 100 Park Avenue, New York 17, New York.

OFFICES: Albany • Birmingham • Boston • Chicago • Dayton • Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh • St. Louis • Waco

CB-88 "USS," "Atlas" and "Duralastic" are registered trademarks

Universal Atlas Cement
Division of
United States Steel



For more facts, use Request Card at page 18 and circle No. 300

MAY, 1961

How **PAYLOADER** machine can "unsqueeze" your profits

There is no single or simple way to relieve the pressure on profits created by rising costs and greater competition. But we do suggest that consideration of the following facts and fundamentals may help you to eliminate or reduce the "squeeze".

Buy Multi-purpose Machines whenever possible

Equipment costs money, and the more limited its use the more pieces and types of equipment you must have. Machines with greater versatility and mobility to handle more kinds of work can not only reduce the equipment investment, but can be kept profitably busy during a greater part of each shift, contract or working season.

PAYLOADER tractor-shovels are basically multi-purpose . . . and are as mobile as a truck in getting where they are needed in a hurry under their own power. In fact, they can go and work many places where a truck would bog down. In addition to their basic versatility and mobility, PAYLOADER units offer extra multi-purpose usefulness through the widest choice and variety of Allied Equipment ever made available for tractor-shovels. Allied Equipment and Attachments in addition to these illustrated, include: A Blacktop Spreader to lay hot or cold mix up to 10 feet wide; a Vibratory Compactor that is self-powered and works 10-foot widths; Earth Augers, Fork Lifts, Winches, Angling Blades; Rotary, "V" and blade type Snow Plows.

Buy the Very Best Machines . . . it costs less

If you want to increase your profits, you can only afford to buy the very best. The best equipment is *proven* and *dependable* . . . is built of the finest materials and to the most exacting standards. It will give you less trouble and fewer hours of "down-time" . . . is easier and safer to operate as well as easier to service. And the better the maintenance a machine receives, the better the service it will give you. Finally when you are ready to replace this equipment it will have a higher trade-in value.

PAYLOADER units have a history of quality, performance, service and trade-in value unmatched in the rubber-tired tractor-shovel field.

Buy from a Top Distributor Organization

Last, but by no means the least consideration in choosing equipment is the Distributor — his reputation, experience and facilities.

PAYLOADER Distributors are outstanding in these respects. They have the most tractor-shovel experience . . . have a full line of sizes and types to fit your needs. And to back up your purchase, they have complete parts and service and factory trained service personnel, supplemented by Hough's own field engineers.



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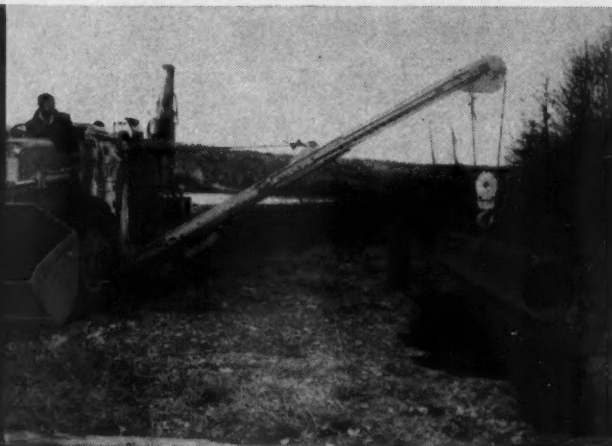
BIG LOADER CONVERTS TO A DOZER

The big 300 H.P. Model H-120 PAYLOADER can be converted to the Model D-120 PAYDOZER, or vice versa, at a cost of only about 10% over the price of one unit.

Conversion can be made in 8 man-hours. You have a choice of a 4 to 6 cu. yd. loader, or a big pusher-dozer at your call, for little more than the price of one.



3
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BACKHOE • SIDEBOOM • LOADER

Three 4-wheel-drive PAYLOADER sizes can be supplied with either a Superior Sideboom or a Wain-Roy Backhoe, or both. All three tools can be used as desired on the

same job because they do not interfere with each other. A Drott "4-in-1" bucket can also be supplied in place of the regular bucket with this combination.



4
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1



LOADER • CLAM • DOZER • SCRAPER

A PAYLOADER with a Drott "4-in-1" bucket is the most useful and useable tool ever developed for earth and materials moving work. It handles loader, clamshell,

bulldozer or scraper work at the operator's will. These all-purpose buckets are an exclusive-on-rubber on PAY-LOADER units, and for all 4-wheel-drive models.

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY - INTERNATIONAL HARVESTER COMPANY

HOUGH, PAYLOADER, PAYMOVER, PAYLOGGER, PAYLOMATIC and PAY are registered trademark names of The Frank G. Hough Co.

THE FRANK G. HOUGH CO., 762 Sunnyside Ave., Libertyville, Ill. (5-B-1)

☐ Send data on all PAYLOADER models and Allied Equipment.

☐ Send data on Loader-Dozer Combination

Name _____

Title _____

Company _____

Street _____

City _____

State _____

Suspended from a steel frame for easy maneuverability, this McKiernan-Terry 9-B-3 hammer is used to drive steel sheet piles for cells of a cofferdam during first-stage construction of the Columbia Lock and Dam at Dothan, Ala.



Steel frame aids pile driving for cofferdam

A steel frame built by joint-venture contractors Winston Bros., Minneapolis; Green Construction Co., Des Moines; and Tecon Corp., Dallas, to help maneuver a pile-driving hammer is facilitating work on a 450-foot-long cofferdam enclosing first-stage con-

struction of the Columbia Lock and Dam at Dothan, Ala., on the Chattahoochee River.

The project calls for construction of a navigation lock 505 feet long between gates, and a dam consisting of a gated spillway 280 feet long and an overflow section 340 feet in length. The lock, which will handle a lift of 20 feet, will be 750 feet long, with upstream and downstream guide walls totaling 1,028 feet in length.

The cofferdam, composed of fourteen 52½-foot-diameter cells and nine 62-foot-diameter cells, is being built from end sections of earth dike toward a closure in the river. Each cell is driven around a 30-foot-high steel template supported on eight 8-inch pipe-pile spuds about 55 feet long. The spuds are incorporated into the framework of the template to simplify moving and anchoring of the big unit. The cells are completed one at a time and connected with pairs of sheet-pile arcs. Each cell is constructed by first setting the entire circle of piles, up to 75 feet in length, then driving them with a McKiernan-Terry 9-B-3 hammer swung from an American crawler crane stationed on top of the filled cells.

Hammer suspended from frame

The hammer is suspended from the contractor-built frame, equipped with four projecting arms. Tag lines are deployed from the arms to facilitate positioning of the hammer over the tops of the piles. As each cell is completed, the template is removed and advanced, and the cell is filled with porous material.

The L. B. Foster Co., Pittsburgh, Pa., is supplying the more than 4,000 pieces of MP-101 steel-sheet piles for the cofferdam on a rental basis. Major quantities on the job include 172,000 cubic yards of concrete and 1,750,000 yards of excavation, which covers an area extending about two miles along the river.



Each of the 23 cells of the cofferdam is driven around a 30-foot steel template, supported on eight 8-inch pipe-pile spuds about 55 feet long.

CONTRACTORS AND ENGINEERS

New UNIT 1-YD. MACHINE



FAST, POWERFUL, BUILT-TO-LAST for lowest cost yardage

Here is the new MODEL 271-C, Unit's answer to your need for a 1-yd. machine that will do a better job of moving dirt, yet be economical to own and maintain. This new addition to the UNIT line retains many of the time-proved features that have won other UNITS world-wide fame for complete reliability and top performance. Add to these dependable features new advances exclusive to the UNIT 271-C, and you'll see why this machine can make more money for you.

The UNIT 271-C features a new compact swing circle gear assembly with upper works mounted on a large diameter, double live ring of steel balls running in hardened races. On the job, this means a friction-free, fast

swing. With center pin mounting, hook and turntable rollers, and roller path eliminated, there's little lubrication required . . . practically no day-to-day maintenance.

The new 271-C also features a unique system that keeps hard working swingers extra cool, extending their life. Swingers run in a bath of oil which is kept cool by a set of copper coils connected directly to the radiator cooling system. Thermostatic control holds temperature below the point where clutch lining life is normally affected by heat.

There is a lot more to tell about these and other UNIT advantages on this, the newest entry into the 1-yd. field. Let your local Unit distributor give you the complete 271-C story.



UNIT CRANE & HOIST CORP.
6309 W. Burnham Street
Milwaukee 19, Wisconsin

The Model 271-C FEATURING

DOUBLE BALL BEARING SWING CIRCLE

Friction-free swing, higher load capacity, sharply reduced maintenance time.

OIL-COOLED SWING CLUTCHES

Here's the ultimate in dissipation of harmful heat!

EXCLUSIVE ONE-PIECE MAIN MACHINERY CASE

All gears, shafts, and bearings completely enclosed in a constant oil bath.

EXCLUSIVE AUTOMATIC TRACTION BRAKES

Trigger-fast braking provided in either direction of travel without manual control.

STRAIGHT-IN-LINE ENGINE MOUNTING

Longer life, better performance, and increased efficiency because all working parts are perfectly aligned . . . power flows directly to main machinery.

NEW FULL VISION CAB

Operator can see in ALL directions at all times. Promotes safety, increases efficiency.

DISC-TYPE CLUTCHES

Provide uniform pressure without grabbing or chattering . . . easily adjusted.

WORM-DRIVEN POWER TAKE-OFF

Provides "one step" speed reduction between power unit and transmission shaft . . . eliminates many wearing parts . . . minimizes friction losses.

FULL CONVERTIBILITY

Shovel, dragline, trencher, clamshell, lifter, and magnet crane front ends available.

INVOLUTE-SPLINED SHAFTS

Shafts in upper works and crawlers are involute-splined for great strength. Wear is reduced . . . replacement is seldom necessary.

For more facts, use Request Card at page 18 and circle No. 301



Positioned on top of filled cofferdam cells, an American crawler crane holds the steel frame with suspended hammers during driving operations. More than 4,000 pieces of L. B. Foster MP-101 steel sheet piles are being used on the job.

When first-stage construction is completed late this year, sheet piling will be pulled and used to build the second-stage cofferdam on the opposite side of the river.

Personnel

Heading the project for Winston-Green-Tecon are T. A. Leines, project manager; Jack Hickman, general superintendent; and F. T. Hillman, Jr., project engineer. H. N. Haygood is resident engineer for the Mobile District of the U. S. Army Corps of Engineers.

THE END

FWD Corp. purchases Wagner Tractor firm

FWD Corp., Clintonville, Wis., pioneer maker of all-wheel-drive vehicles, has acquired Wagner Tractor, Inc., Portland, Ore. Wagner, which will be operated as an FWD wholly owned subsidiary, produces heavy-duty, 4-wheel-drive tractors for pushing and pulling scrapers during loading, earthmoving, dozing, and land leveling. It also manufactures two basic types of compactors, a cleat-type unit and a sheepsfoot type, for use in construction and road-building work.

Gibbs & Hill to move

Gibbs & Hill, Inc., consulting engineering firm of New York City, with headquarters in Pennsylvania Station and offices at 461 Eighth Ave., has leased two floors in the former Equitable Life Assurance building at 303 Seventh Ave.

The move, scheduled to take place after modernization of the building is completed early in 1962, will consolidate the firm's offices in a new executive headquarters.

Leonard Construction names engineering head

David C. Hale has been appointed director of engineering for Leonard Construction Co., Chicago. Since 1958, he has been manager of construction for the Inorganic Chemicals Division of Monsanto Chemical Co.

For more facts, use Request Card at page 18 and circle No. 302

Film on techniques for roadside spraying

A film illustrating the latest in roadside spraying techniques, and featuring the new John Bean Contour-Matic boom and high-pressure sprayer, has been released by John Bean Division, Food Machinery & Chemical Corp., Lansing, Mich.

The 12-minute sound film shows the sprayer's ability to adapt quickly to various spraying situations as the operator manipulates the hydraulically operated boom. Sections of the boom can be maneuvered to match the terrain as roadside contour varies.

The film may be obtained on a loan basis for group showing by contacting the advertising department, John Bean Division, Food Machinery & Chemical Corp., Lansing 4, Mich.

New Hercules plant

Hercules Powder Co., Wilmington, Del., is constructing a new multi-million-pound chemicals plant at its Hopewell, Va., facilities.

The plant, which will manufacture Natrosol, a nonionic water-soluble stabilizer and thickener used in surface coatings, is scheduled to be in operation early in 1962.

WORTHINGTON COMPRESSOR NEWS:



MONO-ROTOR PROVEN...WARRANTY QUADRUPLED

The new line of Worthington Mono-Rotor compressors has gained extensive field experience with outstanding success. Performance has been so successful, in fact, that Worthington has lengthened its warranty period from 3 months to one year. It is the first major construction industry compressor manufacturer to do so.

Mono-Rotor units have proven themselves in widespread areas over the last 3 years. They are in locations ranging from New York City to Hawaii—from Alaska

to Argentina. Service conditions have ranged from the intermittent use in winter and summer to three-shift use for months at a time.

What makes the Mono-Rotor compressor so dependable? It is extreme simplicity.



NEW 125' MONO-ROTOR BLUE BRUTE

It actually has 63% less parts than its two-stage predecessor. The Mono-Rotor has just one stage, one rotor, two bearings, no gears and no oil pump. No other compressor design is so simple.

The new Worthington Mono-Rotor compressors have other benefits, too. They

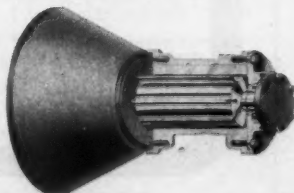
are 20% lighter in weight and are designed for improved towing and tracking. The 3rd wheel is standard equipment for easier handling on the job. It runs all day on a tank of fuel. There's an engine-saving clutch and many other features.

The Mono-Rotor can now be ordered in the 85', 125' and 250' sizes. See it... rent it... or buy it at your Worthington dealer listed in the Yellow Pages under "compressors". Or write Worthington Corporation, Dept. 60-39, Holyoke, Mass. In Canada, Worthington (Canada) Ltd., Brantford, Ontario.



WORTHINGTON

PRODUCTS THAT WORK FOR YOUR PROFIT



MONO-ROTOR: 1 STAGE... 1 ROTOR... 2 BEARINGS... NO GEARS... NO OIL PUMP

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construction sheet long consisting of long and in length. A lift of 4,000 pieces of L. B. Foster MP-101 steel sheet piles are being used on the job.

When first-stage construction is completed late this year, sheet piling will be pulled and used to build the second-stage cofferdam on the opposite side of the river. Each 10-foot-high on eight 8-foot-diameter piles, but 55 feet apart, is incorporated into the template to bring of the completed one with pairs of piles. It is the entire in length. McKiernan-

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For more facts, use Request Card at page 18 and circle No. 302

MAY, 1961

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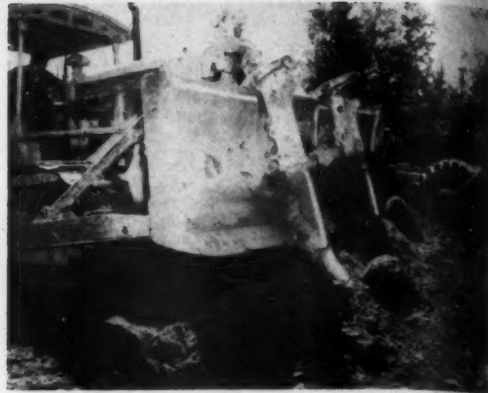
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No special techniques—just plain hard work—bring 19 miles of U. S. 141 to grade in Michigan's Upper Peninsula. These TS-18 scrapers barreling to a cut are on a section being constructed by a joint venture; in the background, a Bay City 1½-yard dragline excavates a bog hole in the roadway. Euclids were generally used for pioneering cuts; other scrapers were used on level ground and shorter hauls.



S. J. Groves & Sons Co., Minneapolis, handled the second contract which called for blasting 100,000 yards of rock. A Gardner-Denver Air Trac is at work here.



A pair of Hensley rippers on the blade of a Cat D7 route boulders before scrapers come along to take rock and dirt for the joint venture of Alpine Construction Co., Inc., St. Ignace, Mich., and Gilliland Construction Co., Alpena, Mich.

Tough grading job tamed

Contractors and Engineers staff article

Grading jobs don't come much tougher than this one. There's loose rock for the scrapers to choke on, and rubbery clay that turns haul roads into a sea of waves.

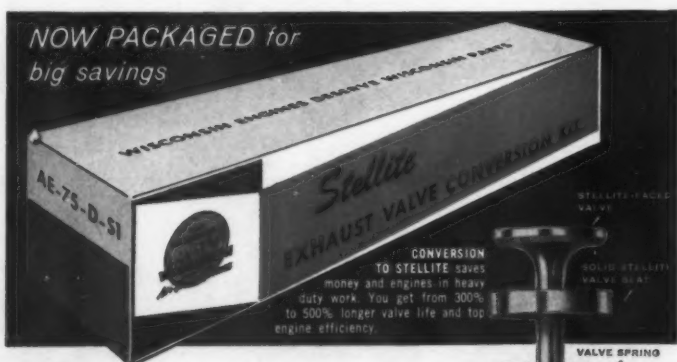
In low places, there are peat bogs, and in high places, solid rock. Any place crews go, they have problems.

This is the grading for the new location of 19 miles of U. S. 141 south of Covington in Michigan's Upper Peninsula. Here, the 2-lane highway slices through densely wooded semi-mountainous country. Roadway cuts go down to 60 feet. Grades on the natural ground are so steep in places that only a dozer can pioneer the cut.

Contractors working on the rocky

road found there was no magic formula for getting the work done. It was a case of getting the right equipment on the job and pushing the work through. They had to fight it all the way.

The 19-mile stretch was cut at about the middle into two contracts. The Michigan State Highway Department awarded the northern half to



NEW PARTS KITS

factory-engineered for
WISCONSIN ENGINES

You save up to four ordinary valve jobs with the new Wisconsin Stellite exhaust valve conversion kit — and for just \$12.85 per valve. Stellite resists extreme heat, abrasion, wear, galling, and pitting. Rotators prevent carbon and gum build-up.

Our TriCrome® ring sets enable you to re-ring Wisconsin Engines with moderately worn, tapered, and out-of-round cylinders for one-third the cost of reboring. And now you can get them in .010", .020", and .030" oversizes for the same price... from \$4.25 per set for singles to \$16.60 for the V-4's.

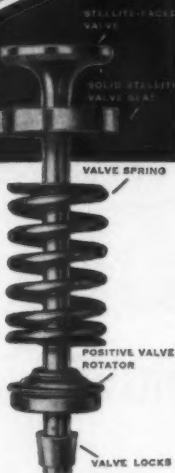
The 4-pack Oil Filter Cartridge kit, with gaskets, is a bargain at \$4.45. Calibrated to Wisconsin Engine pressures, these cartridges assure a correct flow of clean oil at all times.

Our high-temperature safety switch automatically protects your Wisconsin against burn-out through overheating... \$5.95.

Complete kits assure uniform performance, and cost less than if you bought the parts individually. Ask your Wisconsin Engine Service Station for Parts Bulletin Form S-280, or write Dept. C-21.



WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines



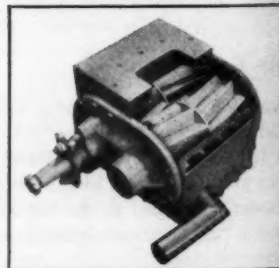
CHECK THESE TOO:

- Fuel Pumps
- Fuel Pump Repair Kits
- Carburetor Repair Kits
- Major Magneto Repair Kits
- Magneto Point and Condenser Kits
- Spray Paint Kit, with Decals
- and tools to make your servicing job easier



Etnyre FX-500... the only distributor with a heat-jacketed pump case!

400 gpm heat-jacketed pump. Engine exhaust is directed into jacketed pump case which surrounds pump impellers, then into intake valve above pump after passing through ducts in pump case. Suction on top and discharge at bottom make pump self-draining — no low points to trap material. Eliminates fire hazard of flame heating from burner.



OTHER FX-500 QUALITY FEATURES

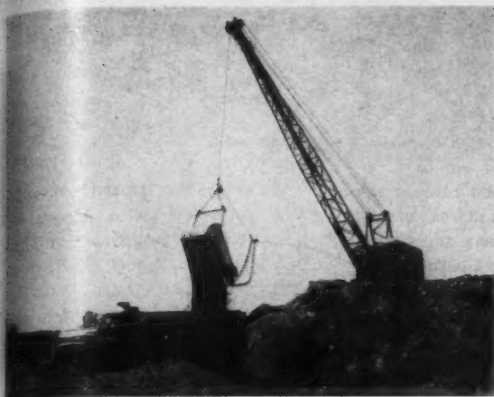
All deluxe equipment... the very best of Etnyre's famous Black-Top line. Engineered for maximum payload. Simple and safe; efficient and economical.

Hard aluminum and stainless steel jacketing. Insulation is 2" fiberglass with asbestos molded blocks for spacers to maintain 2" without compression. Aluminum fenders, flaps, safety-tread cat walk, and safety-tread operator's platform. Full circulating spray bar that turns up 92° for complete valve drainage and NO POSSIBLE DRIP! Many other exclusive features.

For maximum payload... for maximum profit... investigate the Etnyre FX-500 today. E. D. Etnyre & Co., Oregon, Ill.

SEE YOUR ETNYRE DEALER

ETNYRE
BITUMINOUS DISTRIBUTORS



With power on all wheels, these two versatile TS-18 scrapers get along without a push dozer while building a short detour on the joint-venture job.



Working from a borrow area near the new roadway, a Lorain 2½-yard dragline loads a Hercules 10-yard body on an International R-190 with sandy gravel to be used as fill in a bog hole. This is part of the Alpine-Gilliland spread.

They hard work

S. J. Groves & Sons Co. of Minneapolis for \$1.6 million. The southern half was awarded to a joint venture comprising Alpine Construction Co., Inc., St. Ignace, Mich., and Gilliland Construction Co., Alpena, Mich. The contract price was about \$1 million. Each contract had its special problems. Groves had some 100,000 yards of rock to blast out of the cuts. The

contractor was also faced with the problem of hauling in most of the material to build the roadway. Some 800,000 yards had to be trucked in from borrow areas. Only 250,000 yards of material could be taken out of the cuts to build the grade.

Alpine-Gilliland's contract passed through more hilly country, but there (Continued on next page)

**A
COMPLETE
LINE . .
TO FIT EVERY
NEED... BETTER!**

MODEL "T-1"



40 ton capacity triple-axle trailer weighing just 11,800 lbs. Lightweight trailers ranging capacities of 30 tons and up are now available in high strength "T-1" steel.

MODEL GTX



Triple-Axle 6 dual wheels. Capacities 30 through 60 tons. Flat or drop deck.

MODEL GTXT



Gooseneck type, tandem axle tilt-trailer. Capacities 14 through 22 tons.

MODEL XTT



Tandem axle tilt-trailer (tow type), capacities 13 through 20 tons.



TRIPLE-AXLE MODEL GTRY

Exclusive patented triple-axle assembly for positive load-equalization on all wheels. Available with or without removable gooseneck offering simplicity and foolproof design and operation. Available with 15" or 20" wheels with capacities from 25 through 100 tons. Flat or drop deck with drop side platforms.

TRANSPORT TRAILERS is the profit choice of contractors and movers the world over and is the complete solution to your transportation problem.

**"TRANSPORTATION
ENGINEERING
A
SPECIALTY"**

WRITE FOR CATALOG OF COMPLETE LINE



AMROCTA COMPANY 50 Church St., New York 7, N.Y.



Will Never Owe You Anything!

Your OWEN Clamshell Bucket starts making money for you from the first hefty mouthful it bites off . . . and keeps on making money because its rugged construction "stands up". It's the bucket with "The Big Bite that's Just Right!"

The OWEN has a strong appetite for work—an appetite that is never satisfied. These are exclusive features that keep it working for you:

**Block and Tackle Type Reeving
One-piece Head Construction**

**Recessed Lips
Single Main Shaft**

Riveted Bowl Assembly

Prompt service through ample inventory on new equipment and parts.

Write for OWEN information on how these features can make money for you.

The **OWEN**
BUCKET COMPANY
BREAKWATER AVENUE • CLEVELAND 2, OHIO
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A Bay City 1½-yard dragline slings peat out of a bog hole for the joint venture while a Euclid C6 dozer pushes suitable material into the hole to fill it. Material is dropped by scrapers coming from a nearby cut area.



was not as much solid rock in the cuts. Most of the ground was liberally sprinkled with boulders ranging in size from a football to a bathtub. The dirt ran from a greasy topsoil through a rubbery clay down to lenses of sand and silt. Practically all of the 1 million yards of excavation on the contract could be moved by scrapers.

Both contractors had their share of peat bogs to excavate and fill. Both contractors had to mow down a forest of trees before grading could commence.

(Continued from preceding page)

When grading is finished, a 22-foot-wide prime and double seal will be put on the roadway, which is bordered by two 7½-foot gravel shoulders. The roadway rests on a 7-inch aggregate base course, 25 feet wide, carried by a 15-inch (bank-run) subbase. Sometime in the future, it is planned to lay a 22-foot plant asphalt pavement on the roadway.

On the joint venture, some 200 acres of timber was cleared using dozers. In some cases, the stumps of the larger trees had to be dynamited to get them out.

Rippers and scrapers get rocks

Once the grade had been cleared, a pack of scrapers ran onto the job. Eight Euclid twin-engine rigs (four TS-16's and four TS-18's) tackled the steep grades and long hauls. Assisted by a Euclid TC-12 pusher, the scrapers did most of the pioneering of the cuts. When the ground became laden with boulders, a Cat with a ripper routed the rocks to the surface. The smaller boulders could then be scooped up by the scrapers; the large boulders were dozed off the right-of-way.

On the shorter hauls and less steep slopes, the contractor's reliable DW21 scrapers moved in. The four scrapers were particularly good at picking up oversize rocks, getting boulders as large as 5 x 2½ x 2 feet. These were buried in fills under the shoulders.

Because of the spongy nature of the dirt, haul roads along the grade were difficult to maintain. If the contractor's two Austin-Western motor graders had not been constantly at work, the road surface would have turned into a washboard.

Peat bogs along the right-of-way were no great problem, but it took time to dig them out and fill them up. For this work, a Bay City 1½-yard dragline was used to swing the muck off to one side. The fill material was generally trucked in from a borrow pit.

Rock cuts

In contrast to the joint venture, work on the Groves contract involved the blasting of some 100,000 yards of rock from the roadway cuts. The drill-



GORMAN-RUPP'S NEW SUBMERSIBLE PUMP DEWATERING COFFERDAMS ON A ROUND-THE-CLOCK JOB

It's Automatic...It's Electric...It's Unattended!

On the Purdy Construction Company bridge job at Killbuck, Ohio (above) the Model 3VS1 submersible got its baptism of frost. Working on continuous service in midwinter, the pump proved its trouble-free dependability in zero cold.

You can put this rugged Gorman-Rupp submersible to work almost anywhere; leave it under water day and night, or under ice—let it pump dry and run that way for long periods—all without damage. The 3VS1 has only one moving part and three wearing surfaces, built specially to resist sand erosion. It is more compact, easier to handle and service, has fewer parts, costs less, has longer life and pumps more with less attention than other makes.

Add that up and you get only one answer: this is a pump you need in your equipment line-up! See your Gorman-Rupp Distributor, or write us direct.

2933

THE GORMAN-RUPP COMPANY

305 Bowman Street

Mansfield, Ohio

Gorman-Rupp of Canada Limited, St. Thomas, Ontario

For more facts, use Request Card at page 18 and circle No. 307



5 hp motor: single-phase 230 volt, 3-phase 220 volt, or 3-phase 440 volt. Capacity range from 300 gpm at 10' tdh to 10 gpm at 120' tdh. Weight, pump and bale, 95 lbs.



Groves' well run preventive-maintenance program relies in large part on this Graco rig mounted on a Ford F700 truck. Grease is stored in steel compartments rather than in barrels. Each holds about three barrels. An Ingersoll-Rand 85-cfm compressor is at the rear of the truck.

CONTRACTORS AND ENGINEERS

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ENGINEERS



Groves also had bog holes to fill. Material is being dumped in one of them by an International R-190 with Hercules body, while a Cat D8 dozes the sandy gravel into the hole.

ing was accomplished by four Gardner-Denver Air Tracs using 3-inch Sandvik-Coromant bits. The self-propelled drills were powered by three Ingersoll-Rand 600-cfm compressors. The compressors fed into a 4-inch aluminum pipe that ran along the edge of the cut. Flexible hose stemmed from connections on the aluminum pipe to join the individual drill rigs.

In soft rock, the holes were drilled in a 7 x 7-foot checkerboard pattern to a depth of 3 1/2 feet below grade. In hard rock, the holes were drilled in a 6 x 8-foot staggered pattern to about 4 feet below grade.

Using delays in the timing of the blasting, crews fired the center of the roadway cut first. This rock went straight up. The sides of the cut, which were fired a few milliseconds later, fell in toward the center. With this system, up to 14,000 cubic yards of rock was blasted at one time.

Material trucked in

Most of the material used to build the grade had to be hauled in by trucks from borrow pits spotted along the right-of-way. The average haul was about seven miles. The International R-190 trucks rode part of the time on the original blacktop road and part of the time on haul roads. They were normally loaded by a Northwest 80-D shovel working out of a sandy borrow pit.

On the grading that could be handled with scrapers, Groves used four tractor-scraper units. The No. 80 scrapers were pulled by either Allis-Chalmers HD-21's or Caterpillar D8's. Hauls were short, averaging about 1,000 feet.

Personnel

For the Michigan State Highway Department, Earl Numinen is project engineer on the north contract, and Jeano Campana is project engineer on the south contract.

For S. J. Groves & Sons, John Smittle is superintendent and Chuck Freeman, engineer. For the joint venture, Ralph Dolsen is general superintendent.

THE END

Motec controller

Motec Industries, Inc., Hopkins, Minn. has elected Allen H. Seed controller and an officer of the organization.

Seed is secretary and treasurer of the Daffin Corp., Hopkins.

MAY, 1961

HRB bulletin reports on soil stabilization

The Highway Research Board has released Bulletin 267, entitled "Soil Stabilization by Admixing Portland Cement."

The booklet contains four reports. One on a rapid field method for determining cement content of plastic cement-treated base describes the development of the test procedure and its use by field forces, with illustrations of test apparatus and data sheets and a comparison of test results with "yield" figures from several jobs. Another paper on cement require-

ments of selected soil series in Iowa describes investigations of Iowa fine sands as a resource for use in soil-cement. Two other papers discuss comparison of Type I and Type III portland cements for soil stabilization, and development of a test for identifying poorly reacting sandy soils encountered in soil-cement construction.

The bulletin may be obtained by writing the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. Price is \$1.20 per copy.

NEW PRODUCTION RECORDS SET

ONE MILE UNDERGROUND



Trojan 304, with *exclusive* curved-nose rock bucket, speeds loading operations for Peerless Quarries, Inc. Kansas City, Kansas

"With the kind of production we're getting, we are sold on Trojan," says S. A. Miller, general superintendent of Peerless Quarries. After comparing other machines, Peerless picked a Trojan 304 with exclusive curved-nose rock bucket to load blast-crushed limestone deep underground. Low mine ceilings presented a clearance problem in loading high, side-boarded trucks — Trojan's greater loading reach solved it. Mr. Miller further states, "Our Trojan 304, with its special rock bucket gets penetration under load. It is not necessary to crowd hard enough to spin the wheels. Most other loaders have to go into the pile much faster to fill the bucket — not Trojan. This fact alone has resulted in our having spent only eight dollars for maintenance in better than six months operation. Loading an average 1500 tons of limestone daily, we've eliminated an hour overtime for each operator by buying Trojan." Trojan's easy loading features mean high production. Call your Trojan distributor for a date—today! He'll show you Trojan's performance data that proves lower costs, longer life and trouble free operation with a demonstration on your job.



TROJAN
TRACTOR SHOVELS
YALE & TOWNE

THE YALE & TOWNE MANUFACTURING COMPANY
TROJAN DIVISION • BATAVIA, NEW YORK

For more facts, use Request Card at page 18 and circle No. 310

New rules—and a new tool for . . .

High-strength bolting

Contractors and Engineers staff article

A high-strength bolt makes a cold connection—but a red-hot subject. Ever since bolts began replacing rivets, there has been much debate and controversy over this deceptively simple fastener.

Researchers have been at work trying to determine the best permissible bolt tension. They have sought to find better ways of measuring the tension in a bolt. Based on what they have found, specifications have recently been altered.

In this rapidly changing field, many contractors may find themselves using the rules of yesterday when they should be making use of the facts of today.

Fast disappearing is the practice of moderate tensioning of high-strength bolts. The present trend is for higher and higher tensions. Pull the bolt up beyond proof load. Go to the yield point. Get a stronger, safer connection.

Here's another surprise. Torque, as a standard, is on the way out. Tension is the new standard.

New wrenches are coming on the market—power tools that get the job done faster and with better control. This month, Gardner-Denver Co. will introduce a new, air-powered, impact-type wrench. According to the manufacturer, the wrench can control tension to within close tolerances. It is a lightweight tool that answers only to the tension in the bolt—not the torque required to turn the nut.

Rules have changed

When it comes to the proper tension in the bolt, most contractors go by the book.

For most building contractors, the book is "Specifications For Structural Joints Using ASTM A325 Bolts." The specifications are approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation.

Recently, the specifications have been changed. In the March, 1960, edition (which replaces the February, 1954, pamphlet), the change has been in the direction of higher bolt tensions. The minimum bolt tension has been increased from 90 per cent to 100 per cent of proof load. Proof load is the load that the bolt must withstand without permanent deformation. It is slightly (about 4 per cent) below the yield point.

In reporting on this change of specifications, the official magazine of The Industrial Fasteners Institute (*Fasteners*, Fall-Winter 1960 issue) states: "The significance of this increase (from 90 to 100 per cent) is that the Research Council fully realizes and expects that all properly tightened bolts will be preloaded

beyond yield and into the plastic range. . . . The Research Council specifies no maximum bolt tension. This can be interpreted as approval for tightening high-strength bolts to the highest load level possible prior to actual bolt fracture."

Although stressing beyond the

yield point is a concept that many contractors find hard to accept, it is based on extensive research and countless tests. It is supported by the turn-of-the-nut method of tightening that has been in practice for many years. Turning a nut one complete turn beyond a snug position

often brings the tension in the bolt into the plastic range.

There is more of a margin of safety between the yield point and the break point than some contractors may realize. Starting at the yield point, you can turn a nut one complete revolution—and sometimes two—



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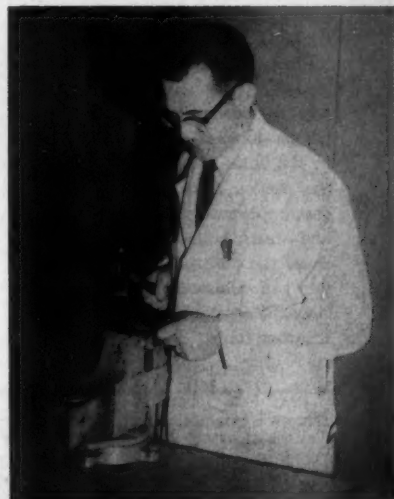
before the bolt breaks. In tightening from the yield to the break point, the tension in the high-strength bolt increases about 12 per cent.

Why tighten a bolt to the utmost, anyway? Because it makes a cheaper, stronger connection. Making maximum use of the strength of a bolt

(Continued on next page)



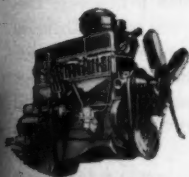
High-strength bolting (used here for Chicago's new exhibition center) shows a trend toward higher and higher tensions. ASTM spec now boost minimum bolt tension from 90 to 100 per cent of proof load. One of the new tools designed for the work—a tension-control wrench—is being introduced this month by Gardner-Denver.



Roger Swanson, developer of the tension-control wrench, runs a test. The $\frac{3}{4}$ -inch high-strength bolt with washer and nut had been tightened to a tension close to the proof load and the stretch (tension) of the bolt measured. Now he mashes the threads of the bolt.

HERE'S WHY IT'S A GOOD IDEA TO GET A CHEVY PICKUP:

Because Chevy's wide choice of models (there are 15 of 'em!) means you'll get the right pickup... because each is engineered to the highest standards... because Chevy's rugged, smooth-riding build lasts longer, costs you less to own and keeps your profits at peak levels. Chances are, whatever you consider most important, you'll find Chevrolet has thought of it first, and done most about it. Whether you get a handsome Fleetside or handy Stepside model (or possibly Corvair 95 Rampside or Loadside or one of a half-dozen four-wheel-drives) you'll soon be convinced that buying a Chevy pickup was the best idea you ever had!



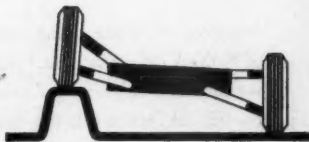
ECONOMY

Chevrolet slant on economy makes the most sense of all, with the tight-fisted 235-cubic-inch Buickmaster 6 (standard) leading the way. It's the most experienced money-saver going, one that's powered more payloads than any other engine in the business. It's known for its stingy way with a drop of gas and also for its rock-solid durability. It keeps your Chevy at work, making money, instead of in the repair shop, costing. And if you prefer the extra zip of V8 power, there's the eager, efficient Trademaster V8, 160-hp, power strong and available at minimal extra cost in all conventional pickup models.



CAPACITY

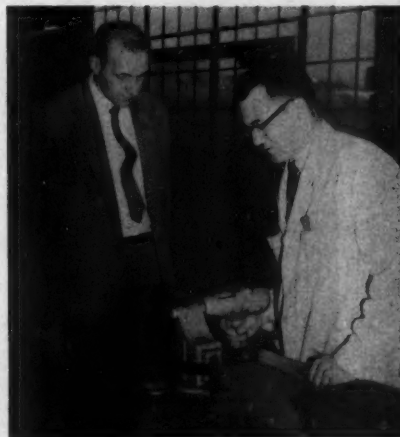
Chevy pickup bodies—6 $\frac{1}{2}$, 8 or 9 feet long—are tops in cargo capacity and convenience, with a long list of bonus-built features to keep them working better and looking their best from delivery to trade-in. Both Fleetside and Stepside models feature select wood floors for better footing and quieter going, with steel skid strips to ease loading and unloading. Extra strong grain-tight tailgates with anti-rattle latches and support chains minimize bulk cargo leakage and offer firm support for extra-long loads. Fleetside body sidewalls are double-walled in the lower section, for extra rigidity and protection of exterior surfaces against dents caused by shifting cargo.



PROFIT- ***** PROTECTING RIDE

All of Chevrolet's 2-wheel-drive pickups feature years-ahead Independent Front Suspension design, with ride, roadability and ruggedness that are paying off for truckers everywhere. The reduction in driving effort and fatigue that makes a bigger day's work come easy is just one part of the three-way Chevy payoff. The same shock-cushioning action protects your cargo against damage en route, and also protects the truck itself against the bumps that can batter the life out of cab, body and chassis components. Sounds too good?... sample it for yourself at your Chevy dealer's, soon!... Chevrolet Division of General Motors, Detroit 2, Mich.

1961 CHEVROLET STURDI-BILT TRUCKS 



After being deformed, the bolt with washer and nut is again tightened in a steel block by the tension-control wrench. It takes 3 seconds before the nut stops turning. L. H. Workman, supervisor of the product engineering group for Gardner-Denver, looks on.



A caliperlike device measures the stretch of a bolt, and consequently the tension. It is found to be the same as on the previous run, when the threads were undeformed. This indicates that variations in frictional resistance do not keep the wrench from getting the specified tension in the bolt.

(Continued from preceding page)

allows designers to use fewer bolts in a given connection. This, of course, means fewer bolts for the contractor to tighten up.

Here are some rather surprising facts about highly tightened connections. If a bolt is under greater tension than the fluctuating applied loads, it will never fall or loosen. Applied loads to the connecting plates do not add to the tension in the bolt (unless the loads exceed the tension in the bolt, and correct design prevents this). In a connection where bolts are properly tightened, the force of friction between the two plates resists the applied loads. The bolts are not subject to a shearing force.

Torque or tension?

Torque is a time-honored standard, and nobody likes to throw it out the window. Nobody can throw it out the window, because a torque wrench is the only practical tool to measure tension in a bolt in a field connection. Still, a torque wrench is very likely to give an inaccurate measurement of the amount of tension in the bolt.

Let's take an example. You are tightening up a nut with a torque wrench to a reading of 320 foot-pounds. The nut hits a burr. There is a high resistance to turn, and you get a reading of 320 foot-pounds in a hurry. But there is not sufficient tension in the bolt; there is a false reading on the torque wrench.

Even without burrs, there are many unpredictable frictional forces

that give readings on the torque wrench but do not increase the tension in the bolt. In fact, an average of only 10 per cent of the force applied to the wrench goes into increasing the tension in the bolt. The remaining 90 per cent of the force on the wrench goes into overcoming frictional resistance in the threads and between the nut and the washer. Often there is a gouging by the corners of the nut on the washer. These are variables that are difficult to control.

What do the new specifications of the Research Council say about torque as a standard? First, they do not give specific torque values to obtain certain bolt tensions—as did the 1954 spec. The equation of torque and tension must be arrived at in the field by

For more facts on insert, use Request Card at page 18 and circle No. 313

calibrating the torque wrench (or impact wrench) against a device that directly measures bolt tension. Only after calibration can the torque wrench be used to check the tension of bolts in place on the structure. A torque wrench, however unpredictable, is still the only practical tool for measuring the tension of a bolt in place.

New tool

Gardner-Denver has a new impact-type wrench which, it believes, will accurately set the tension in a bolt. The wrench will control tension at no sacrifice to speed.

The tool is called a tension-control wrench and, for its big claims, it is not very impressive looking. It resembles any other air-powered impact wrench, but it's smaller. It has an adjustable screw for controlling the amount of power going into the wrench and thereby the amount of tension put on the bolt.

A demonstration, recently held for the benefit of the writer, left little room for argument about the machine's ability to control tension.

In the demonstration, a 3/4-inch high-strength steel bolt with washer and nut was tightened with the wrench to a certain tension close to the proof load. A calliperlike device measured the amount of stretch in the bolt and thereby the amount of tension. Within the elastic limit of steel, the amount of stretch is a true measurement of the amount of tension in the bolt.

Next, the bolt assembly was loosened and taken apart. The threads of the bolt were mashed with repeated blows from a hammer. Then the same bolt was again tightened with the tension-control wrench. The callipers checked the stretch of the bolt. It was identical to that achieved with the undeformed threads.

In another experiment, the wrench was tried first on a dry bolt and then on a well oiled bolt. The wrench took both bolts up to very nearly the same tension. Both experiments indicated that great variation in frictional resistance made little difference in the wrench's ability to get the specified tension.

Substantial variation in the pressure of the air supply does not affect the ability of the wrench to control tension. At the demonstration, the air pressure to the wrench was cut from 90 to 70 psi without appreciably changing the resulting stretch (tension) of the bolt.

This is not a kick-out-type wrench. When the operator sees that the nut has stopped turning, he shuts off his wrench. If he delays in shutting off the wrench, no harm is done. The wrench can continue to impact for 15 seconds without appreciably changing the tension in the bolt.

The engineers at Gardner-Denver recommend tensioning all high-tensile steel bolts to the yield point. This results in a near-maximum clamping

Although driving was hampered by dense sand and a high water table, the contractor reported there were no failures of Armco Pipe Piles.



New steels are
born at
Armco

**"We have found
Armco Piles to be
very satisfactory,"
says contractor**

Woodrow W. Ford, piling contractor of Norfolk, Virginia, said, "Although we encountered severe soil conditions on this job, there was not one failure of the Armco Piles driven."

On this foundation project for a North Carolina hospital, the firm of Woodrow W. Ford used 10-inch O. D. Armco Pipe Piles with .188- and .203-inch wall thicknesses. A total of 216 piles were driven with a flat plate end closure, using a No. 1 Vulcan hammer delivering 15,000 foot-pounds of energy per blow.

Write us for dimensional and technical data on Armco Pipe Piles. For rush orders, see your local Armco Sales Engineer. Armco Drainage & Metal Products, Inc., 6541 Curtis Street, Middletown, Ohio.



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& Metal
Products**



For strength,
economy,
durability

For more facts, use Request Card at page 18 and circle No. 312

CONTRACTORS AND ENGINEERS

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Contractors report

For about eight months, proto- types of the wrench have been in use by several contractors and fab- ricators in Michigan. The two that the writer talked with were less en- thusiastic than the manufacturer, but in general, they were satisfied with the performance of the new wrench.

Ralph Sigman, superintendent for R. C. Mahon Co., Detroit, put the large-size wrench to test while erect- ing the steel on the Great Lakes Steel plant addition in Detroit. He reported that the wrench was fast and tightened the bolts consistently to the proper tension. He recommended that the home office buy one.

A steel erector and fabricator has also tried out the wrench. The com- pany is using it in the fabrication shop to tighten high-strength bolts on automobile-carrying racks for

MAY, 1961

Prototypes of the wrench are already in use. This workman is bolting connections on an automobile-carrying rack for railroad cars that will carry autos stacked three high.



force without getting too close to the break point. The yield point is easily determined with a torque wrench. This is the way you do it: Tighten the nut with a torque wrench until the resistance levels off—until the reading on the gage does not increase. This is the yield point. Mark the position of the nut relative to the plate. Use this position to calibrate the tension-control wrench.

An extensive series of tests with different-size bolts at the Gardner-Denver plant has indicated that with the wrench it is possible to hit within plus or minus 10 per cent of the yield point in a tightening time of three seconds.

How does the wrench work? Roger I. Swanson, its developer, knows, but he's not telling. This is a trade secret. Generally speaking, however, the energy input to the wrench is carefully controlled. This governs the output and, of course, the tension in the bolt.

This month, two sizes of the ten- sion-control wrench will be put on the market. The smaller wrench can handle 1/2 to 3/4-inch high-strength bolts. The larger can take 3/4 to 1 1/4-inch high-strength bolts. The smaller weighs 11 1/2 pounds and operates at a free speed of 3,300 rpm at 90 psi. The larger weighs 20 1/2 pounds and operates at a free speed of 3,600 rpm at 90 psi. Prices are competitive with other impact wrenches of similar capacity.

Contractors report

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A steel erector and fabricator has also tried out the wrench. The com- pany is using it in the fabrication shop to tighten high-strength bolts on automobile-carrying racks for

railroad cars. The company is using the smaller wrench to tighten 3/4-inch bolts.

The plant engineer of this firm says that it is difficult to give an accurate appraisal of the perform- ance of the wrench. On the basis of his general observations, however, he has found that the wrench gives moderately better control of tension at somewhat reduced speed of op- eration. He likes the way the wrench runs through burrs without stopping, and he likes its light weight.

Engineers at Gardner-Denver claim that when contractors become fully acquainted with the tool and when they trust it to do the job it can do, the men in the field will have a high- speed, reliable method of setting bolt tension.

THE END

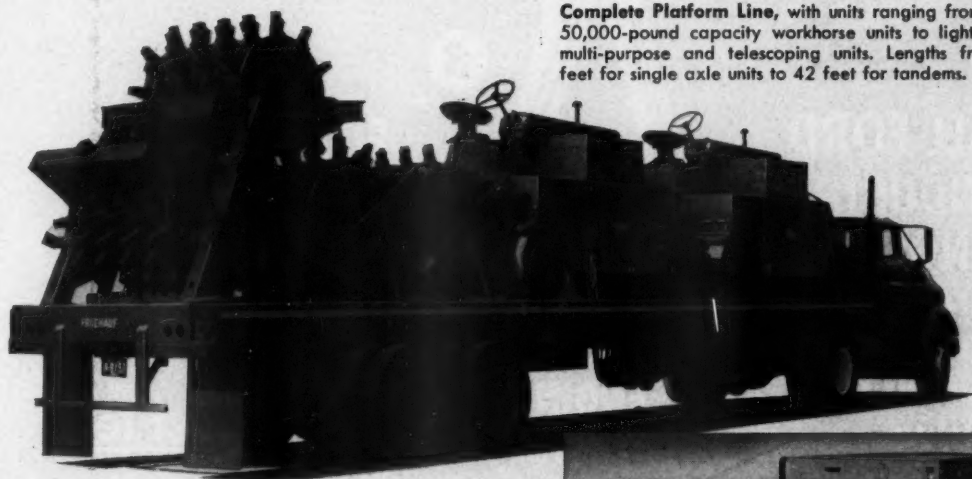
Atlas builds new plant

■ Atlas Powder Co., Wilmington, Del., is constructing a plant designed for the production of 50 million pounds a year of glycerin and related polyols on the site of the company's Atlas Point chemicals plant south of Wilmington.

Glycerin, ethylene glycol, and other glycols will be produced by a new Atlas-developed process that involves both hydrogenation and hydrogenol- ysis of carbohydrate raw materials.

The M. W. Kellogg Co. is both en- gineering and construction contrac- tor for the plant. The Chemical Con- struction Co. will build the facilities needed to supply hydrogen to the plant. Completion is scheduled for 1962.

Whatever Type You're Looking For... FRUEHAUF BUILDS IT!



Complete Platform Line, with units ranging from brawny 50,000-pound capacity workhorse units to lighter-weight multi-purpose and telescoping units. Lengths from 21 1/2 feet for single axle units to 42 feet for tandems.

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In addition to a full line of platforms, carryalls and dumps, Fruehauf offers a wide selection of bulk cement tanks, high temperature insulated tanks, pole trailers, and dump trailer chassis. Fruehauf has the industry's *only* truly nation-wide service facilities for your convenience. Long and short term leasing, too, plus a variety of financing plans to make your purchase of Fruehauf equip- ment easier.

Why not start today to boost your construction profit dollar. Stop in at your nearest Fruehauf Branch and discuss Fruehauf's complete Trailer package with your Fruehauf salesman.

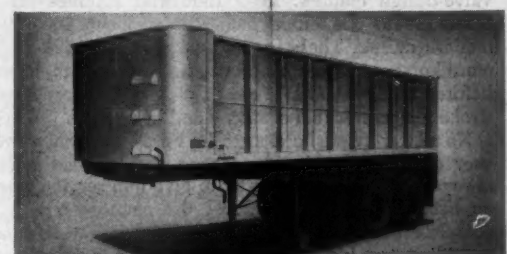


For Forty-Seven Years—World's
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Complete Carryall Line for over and off-road transport. From 15 to 100-ton rated capacity. Level or drop deck models. Flooring of #1 grade hardwood. Removable goose-neck carryall models cut unloading time to less than 15 minutes!



Complete Dump Trailer Line, from aggregate hopper dumps with up to 30 cubic yard payloads to hoist-type dumps with payloads up to 73 cubic yards! Fruehauf dumps give you greater payloads, faster dumping, lower mainte- nance costs.

FRUEHAUF TRAILER COMPANY

10949 Harper Avenue • Detroit 32, Michigan

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City State





Building in sequence cuts missile-base cost

Some 67 separate structures in hardened Titan missile complexes are being built simultaneously at Larson Air Force Base, Moses Lake, Wash., so that economies can be realized on the work. Crews move progressively from structure to structure, making many re-uses of special forms required and good use of experience gained as the work moves along.

Contractors and Engineers staff article

Building an underground (hardened) Titan missile base is a big construction operation, and requirements for close tolerances and cleanliness, coupled with the rush to meet specified completion dates, make the work even more complex.

At Larson Air Force Base, Moses Lake, Wash., the joint-venture gen-

eral contractor, MacDonald, Scott & Associates, St. Louis, Mo., helped keep the costs in line and met the delicate tolerances by keeping as many as 11 separate structures under construction at the same time. This permitted the contractor to use the training and experience of the crews on a maximum number of structures and increased the potential re-uses of the forms. On the other hand, it required unusually careful planning and supervision.

The Titan facility at Larson consists of three squadrons, each with three missile-launching silos and the accompanying control, power, guidance, and other facilities. The squadron complexes are located 30, 32, and 45 miles from the base at Moses Lake.

The general contractor set up headquarters at Ephrata, Wash., and utilized a Cessna 182 airplane for speedy liaison with the three sites. In addition to making daily deliveries of mail and other supplies, the plane enabled the project supervisory personnel to visit all three sites within a period of four or five hours, whereas it was practically impossible to make the rounds of the sites by automobile in one day.

Structures all below ground

Each complex—similar to those at other Titan installations—has three missile silos extending from the surface to a depth of 155 feet. Each has its own propellant terminal and equipment terminal—smaller silos nearby that are connected to a missile silo by tunnels.

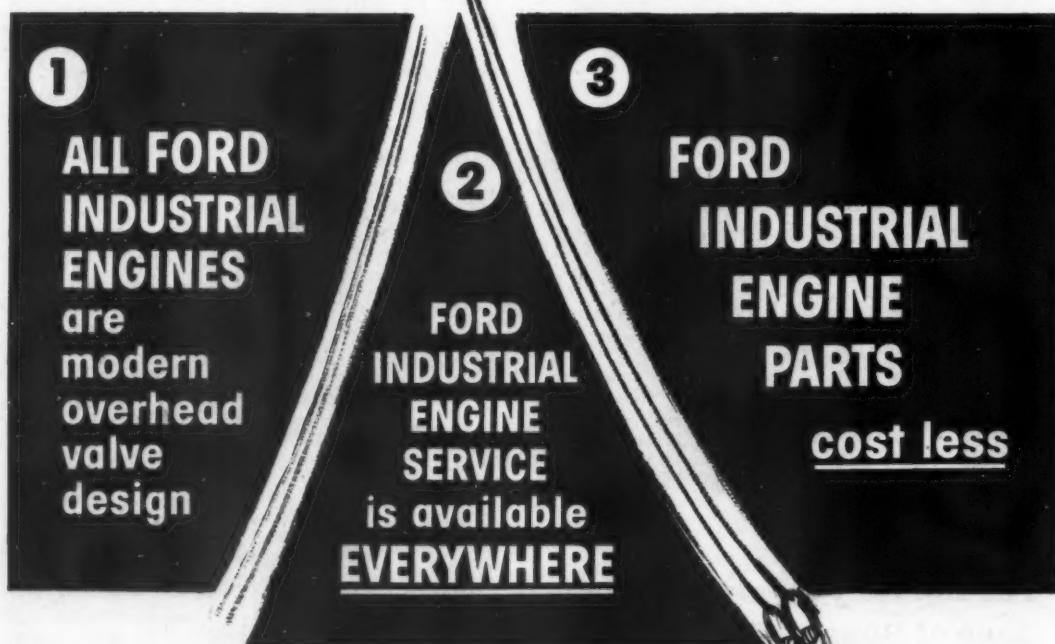
In a central location are dome-shaped control-center and powerhouse buildings which are completely underground. Nearby is an entry and exit portal extending down some 45 feet to the tunnel level. In this same area, there is also an air-intake and exhaust structure that extends from the surface to the tunnel elevation.

At the far end of the complex are a pair of antenna silos for the guidance system. All of these units are connected by tunnels for personnel and utilities, which are located some 45 feet underground. The tunnels are fitted with blast locks, escape hatches, and other protective devices.

As has been the practice at other locations, the contractor excavated in open cut down to about the tunnel level, and carried the excavation for the deep silos down as shaft excavations below this grade. This method permits construction of most of the structures and the tunnels in the open. Backfill is then placed to cover everything except the tops of the few structures that reach to the ground surface.

The open excavation was sublet to Murphy Bros., Spokane, Wash., and the shaft excavation to a joint ven-

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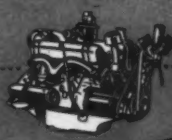
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◀ Crews work on the plywood-lined interior forms for a missile silo. Note the Unistrut anchor units attached to the form; these will be used to support construction scaffolds inside the silos.

Reinforcing has been placed up to the tunnel level and waits for forms to be released from one of the other missile silos so that concrete placement can continue here. ▶



ture of the Northwood and Mannix construction firms of Seattle.

The top 5 to 6 feet at all three sites was a loess silt deposit. Underlying this was a formation of silt, fine sand, and caliche, which extended down 70 feet at site A, 45 feet at site B, and only 20 feet at site C. In each case, this depth marked the beginning of solid basalt.

At site A, Murphy's spread of DW21 scrapers with Allis-Chalmers HD-21 and D9 push and rip Cats had no difficulty making the open excavation down to the tunnel level. At site B, they were scraping into the top of the basalt. At site C, this spread could go only about halfway down; the rest had to be drilled and shot. In the earth excavations, the sides were taken out to a 1½ to 1 slope. This was steepened to ¾ to 1 in the caliche.

From the bottom of the open excavation, the missile silo shafts were carried down another 100 feet or more by drilling and shooting, with tractor-loaders loading the muck into skips to be hoisted to the top. At sites A and B, caliche was kept from sloughing by the use of Prestite immediately after excavation. The Prestite was protected by an application of gunite over 2-inch wire mesh. Wood lagging was used at all sites in shaft excavation where unstable rock was encountered.

Although no water was encountered at any of the sites in the open excavation, a special waterproofing operation was required at site C. This area is presently an arid semidesert, but it is scheduled for irrigation in the near future. Irrigation is certain to introduce ground water that might cause internal seepage without this special protection.

The waterproofing in the deep shafts at this site consists of an epoxied polyvinyl chloride, supplied by Ren Plastics, Lansing, Mich., and approved by the U. S. Army Corps of Engineers in lieu of the membrane-type waterproofing specified. The plastic waterproofing was applied by subcontractor R. L. Stevenson Co., Inc., Seattle, Wash., experts in the handling and application of plastic waterproofing materials.

The waterproofing was done in two applications. First, Ren Plastics primer No. RC 900 was applied at the

(Continued on next page)



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An Allis-Chalmers tractor push-loads a DW21 scraper loading backfill from one of the stockpiles as the backfilling operation gets into swing. A large part of the excavated material is being used as backfill.

(Continued from preceding page)

rate of 200 square feet per gallon. Then after the primer had cured, Ren Plastics epoxied polyvinyl chloride No. RC 920 was applied by pressure spray at about 160 degrees to provide a plastic coating of 25 mils minimum to 30 mils maximum thickness. For protection while concrete was being placed, 1/2-inch fiberboard was applied over the plastic waterproofing.

The earthmoving contractor did his part toward keeping the job on schedule by taking out 750,000 cubic yards of material within 60 days.

Long before the excavation was completed, the general contractor be-

gan building the reinforced-concrete structures. The joint venture had a distinct advantage in having as one of its participants the Morrison-Knudsen Co., Inc., which was winding up work on a similar Titan base near Denver. M-K passed on the benefits of its experience on the earlier job, as well as some of the special forms that had been built. Among these were sets of forms for the powerhouse and control-center domes.

Economy Forms Co. standard Efo form panels were used to build some of the structures, and some specially built Efo forms were used in the missile silos. Job-built wood form panels were used for the propellant and antenna silos, as well as for some of the odd-shaped structures.

The secret of time and money-saving progress was to get as many different types of structures under way as possible, but to build a minimum of duplicate structures simultaneously. This logically led to progressive operations in which key personnel who had just built one structure moved together with any special forms to another similar structure.

While this technique proved economical, it did require extremely careful planning and coordination. Key workmen and materials had to be moved from one site to another. Yet nothing could be permitted to interfere with rapid over-all progress.

An excellent example of the advantageous use of manpower and forms was the prefabrication and precasting of the big covers for the propellant and equipment-terminal tops. Three of each were required at each of the three sites.

A single set of forms was made up at site A. During spare time, the steel was placed and the concrete cast. The forms were stripped and moved in turn to the other two launchers in the A complex. When they had been completed, the forms were moved to site B where the operations were repeated and the forms then sent along to site C.

Thus, the single set of forms was utilized to cast 18 silo covers, and all of them were done during periods when the crews had time to spare.

Floors are spring-mounted

One of the many complicating features of the project was the shock-resistant mounting of the floors and other interior structures of the powerhouse and control-center buildings. Each of these big domed structures has a heavy subfloor that carries a series of spring beams on which a second floor is mounted. This mounting minimizes the transfer of shock loads to equipment in the buildings.

After the subfloor was cast and the spring beams set, the second floor was formed with Tufcor decking that remained in place. This floor was shored up during construction and then lowered onto the spring beams with the aid of 50 jacks, each of 25-ton capacity.



Pavers set new daily record in Michigan

Denton Construction Co. personnel on the job. Left to right, L. M. Denton, president; Mickey Palmer, job superintendent; Charles Leduman, general superintendent; and Richard Mitte, paving foreman.



These four paving machines set a new national record of 8,036 ft laid in a single day. Bethlehem road steel products were used in the record stretch.

1 1/2 miles of 2-lane highway placed with Bethlehem paving steels

A new national record for concrete road pavement laid in one day was set on August 25, 1960, by Denton Construction Co., Grosse Pointe Woods, Michigan.

Working on US 27 north of Indian River, the company placed 8,036 ft of 24-ft wide, 9-in. deep concrete in a 12-hour day. Four paving machines were used to lay the 1.52 miles of two-lane highway.

The paving steels used by Denton—dowel units, hook bolts, base plates, mesh, and reinforcing bars—were all supplied by Bethlehem Steel.



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ENGINEERS



While one Link-Belt crane places steel in the air-intake structure, another Link-Belt, foreground, places concrete in the entry portal. A Cat 977 Traxcavator also works beside the domed structure. A workman is compacting backfill around the entry portal with a Jay tamper.

Concrete placement

Transit-mix concrete was supplied to each site by the Central Pre-mix Co., Spokane, operating from portable plants set up at convenient locations. Much of the concrete was placed by crane and bucket, some of it by a unique bucket called the "moose." This was a bucket with steel tremie attached and equipped with an air-operated gate at the bottom of the tremie.

The largest single concrete placement was 800 cubic yards for a 36-foot lift in one of the missile silos. This required 22 hours of continuous placement. In another large placement for the main floor in the control center, seven buggies placed 560 cubic yards from two 3-yard hoppers in a continuous 10-hour operation.

Concrete placement on the project got under way late in February, 1960, and the 110,000 cubic yards was essentially completed by mid-December. In the meantime, the backfilling had been started, and a substantial part of it was in place before the extreme cold of winter set in.

Safety net in deep silos

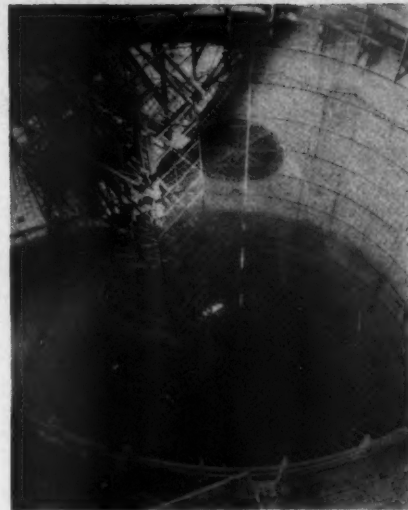
Near the top of each of the deep missile silos, the contractor installed a safety net. At least four workmen fell into these nets and were saved from almost certain death at the bottom of the 155-foot-deep shafts. In addition to saving these lives, the nets gave the workmen a greater sense of security and thus increased their productivity.

Stairways of Safway tubular-steel scaffolding were installed in each of the missile silos, the towers reaching the full height from the floor to the top. Unistrut scaffolds were installed inside the silos for the interior construction. The Unistrut carriers were attached to the inside form panels; a special tape was used to seal the Unistrut channels.

Among the major equipment items at each of the sites were five or more cranes ranging in capacity from 30 to 65 tons. Among those represented were Link-Belt, P&H, Lorain, Bucyrus-Erie, and American. They handled the hoisting of the shaft excavation, placing of the heavy form panels and prefabricated reinforcement.

(Continued on next page)

Nets such as this one saved the lives of four men who fell during construction of the 155-foot-deep missile silos. Knowing the net was there, workmen were able to turn in efficient jobs. Note the scaffold stairway extending to the bottom of the silo.



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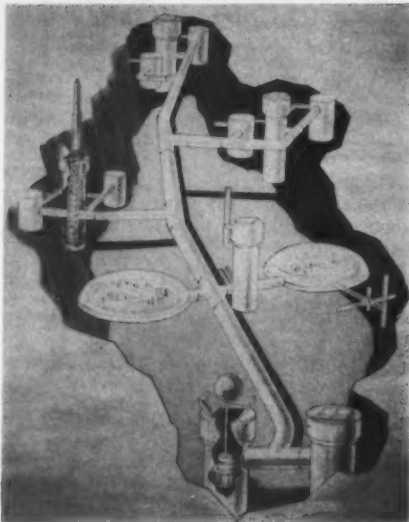
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This cutaway sketch of a typical Titan ICBM complex shows the various underground installations connected by a network of personnel tunnels. In the complex are three missile silos, antenna silos, powerhouse, control center, blast locks, escape hatches, and entry and exit portals.



(Continued from preceding page)

ing, bucketing the concrete, and setting heavy equipment and machinery.

At each of the sites, an Atlas Copco 675-cfm air compressor powered by a 60-hp electric motor supplied compressed air that was piped throughout the complex. Water was obtained at each site from submersible pumps installed in the powerhouse wells. These were drilled under separate contracts prior to the start of excavation; one firm drilled wells at one site, another did the work at two sites.

Communications are vital

Between the three widely scattered construction sites, the contractor's headquarters in Ephrata, and the Corps of Engineers' headquarters at Moses Lake, communications were of extreme importance. The expanse of each site was sufficient to warrant the use of mobile radio, and the intercommunication between sites made it especially valuable. The contractor equipped the vehicles of 27 of the top supervisory personnel with 50 or 80-watt Motorola mobile radios and installed four 80-watt stationary units in the base and field offices.

The Cessna airplane supplied a daily delivery of written instructions, change orders, and mail, and enabled the project manager and his assistants to get to any site in very short order in cases of emergency. It also saved countless hours of travel time in the routine, as well as special inspection trips to the sites.

Since no regular landing strips were available at the sites, strips were built adjacent to two sites. The skilled pilot utilized a little-used section of county road.

The plane, equipped with a Lycoming 215-hp engine, cruised at 130

mph. It was in use an average 60 to 70 hours per month.

Personnel

The participants in the MacDonald, Scott & Associates joint venture are: MacDonald Construction Co., St. Louis, Mo.; Scott Co., Oakland, Calif.; C. H. Leavell & Co., El Paso, Texas; Morrison-Knudsen Co., Inc., Boise, Idaho; Paul Hardeman, Inc., Stanford, Calif.; and F. E. Young Construction Co., San Diego, Calif. The bid price was \$31,600,722, which was 3 per cent under the Engineers' estimate and 1.6 per cent under the second bidder. Supervisory personnel for the con-

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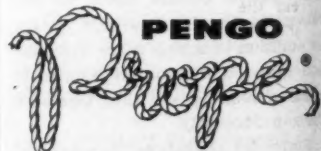
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(8,200 lbs. for ¾" diameter)
- * **LIGHT WEIGHT**
(11 lbs. per 100 ft. ¾" diameter)
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in any climate or weather
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In the control-center building, workmen place reinforcing steel for the floor, which is supporting on spring beams to minimize shock.



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For more facts, use Request Card at page 18 and circle No. 322

MAY, 1961

tractor include: project manager Grover C. Hoskins, general superintendent Bill Barker, assistant general superintendent Rad Sinclair, and site superintendents V. R. Golden, Darrell Jensen, and Don Walhove. On the excavation, John Felton was superintendent for Murphy Bros. Other subcontractors that had major items of work are Meehleis Steel Co., Los Angeles, which furnished and placed the reinforcing steel, and Close Electric Co., Seattle, which is doing the electrical work.

While all project contracts for the Titan missile installations in the Larson Air Force Base area were started under the supervision of the Walla Walla District of the Corps, with Col. Paul H. Symbol as district engineer, supervisory responsibility was officially transferred last October to the newly created Corps of Engineers Ballistic Missile Construction Office at Inglewood, Calif. CEBMCO, as it is known, is under the command of Brig. Gen. Alvin C. Welling.

Lt. Col. Robert W. Fritz, who ran the Titan work in the area under the Walla Walla District supervision, has been transferred on TDY at the Fairchild Air Force Base where three Atlas missile sites are under construction. He was replaced by Col. H. C. Rowland, formerly of Fort Campbell, Ky.

C. B. Olmstead, deputy area engineer, who had been running the construction work in Col. Fritz's absence, continued on as deputy to Col. Rowland under the transfer. Remaining with CEBMCO was Walter J. Murphy, chief of construction. At the three sites, the project engineers are Raymond Hanks, Boyd Kramer, and Merle McClintick. The geologist for the project is Bob Curtis.

THE END

Muller Machinery forms new division

■ Muller Machinery Co., Metuchen, N. J., has formed a new Mor-Flo Equipment Division to develop and produce special-purpose plastering machinery.

The division is introducing a new mortar-pumping machine that "jets" up mortar many stories through pipe and hose to be applied quickly and easily by a single operator.

F. N. "Bill" Bennett, formerly with the Plastering Development Center as vice president and sales manager, will head the new division.

District manager appointed by Eimco

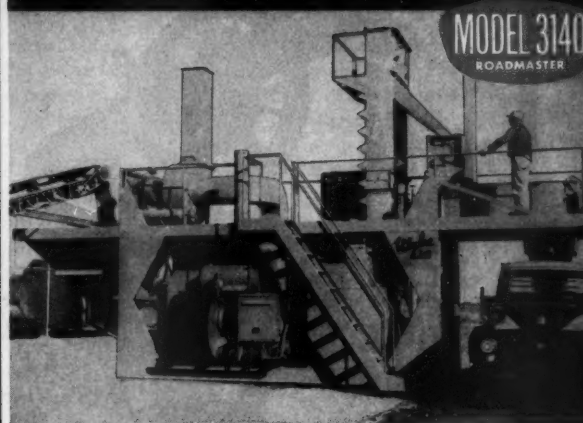
■ The Eimco Corp., Salt Lake City, Utah, has appointed Julius G. Kern, Jr., New York district manager for tractor-loader sales.

Kern has had ten years' experience in the tractor-loader field, serving manufacturers and distributors of crawler equipment in such capacities as trainee instructor, sales representative, district manager, and assistant and industrial sales manager.

For more facts, use coupon or Request Card at page 18 and circle No. 323



NEW WYLIE PORTABLE ASPHALT PLANT
has 30 to 40 tons per hour capacity
(UP TO 50 TONS OF COLD MIX PER HOUR)



Now you can cut high cost labor and maintenance

The new Wylie 3140 Roadmaster ushers in a new era of economy for municipalities. Completely automatic from cold material hoppers to pugmill discharge, this 30 to 40 ton plant is large enough to take care of street paving, as well as supply asphalt for patching.

Self-contained unit requires no legs, piers or assembly

The Wylie 3140 plant was specifically designed to save manpower, both on the job and between jobs. The rugged single-frame design requires no legs or piers, and no erection is needed. The 3140 is complete with rotary dryer, material hoppers, twin-shaft pugmill, hot elevator, dust collector, electric motor, gasoline or Diesel engine power, natural gas or low pressure oil burners, and a 200 gallon asphalt metering system reservoir—all mounted on one single frame, and detachable transportation assembly. Hot oil heater and gradation unit optional.

Completely automatic operation assures a uniform quality mix—saves operating labor

The Wylie 3140 is a completely automatic machine, and when in operation the operator is free to supervise the charging of material hoppers and loading of trucks. All thermometers, gauges and control levers on this double deck plant can be operated from a central control station by just one man. Because of its automatic features, the quality of mix is not dependent upon the skill of the operator.

Write today for complete specifications on the Wylie 3140 Roadmaster asphalt plant.

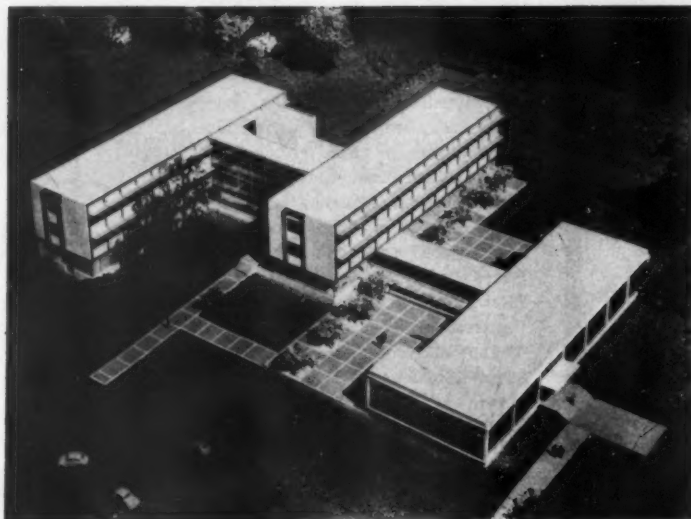


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OUTSIDE PRECAST-CONCRETE COLUMNS, together with precast-concrete wall panels with exposed quartz aggregate, are construction features of the new Volkswagen of America, Inc., national headquarters under construction at Englewood Cliffs, N. J. Jos. L. Muscarelle, Inc., Maywood, N. J., is the general contractor for the \$2½ million 3-wing building scheduled for completion this fall. All floors are of precast, prestressed-concrete twin-tee construction. Located on an 18-acre plot, the 55,700-square-foot building will house office facilities for more than 200 employees.



Hobart welding school for management personnel

■ Hobart Bros. Technical School, Troy, Ohio, is conducting a series of short workshop courses designed to upgrade the ability of key personnel to direct, control, and evaluate fusion welding operations.

Among the subjects covered in the courses are preheating and stress relieving, welding fundamentals for supervisors and engineers, arc-welding inspection and quality control, automatic welding and gas-shield arc-welding processes. The school is run on a twice-a-month basis with one-week courses.

For more information, write to Hobart Bros. Technical School, Troy, Ohio.

Big 1-minute gun
designed and budget-priced
for contractors and engineers

American
made AT ONLY
\$527
(WITHOUT COMPASS)
**BERGER
POLARA**
MODEL 37-916



Contractors and engineers doing accurate construction need the assured accuracy of a 1-minute transit—and welcome the economy of the budget-priced Berger Polara. Over 90 years of Berger transit-making experience went into its design to put all these features within every contractor's reach:

3½" dia. Horizontal Circle of corrosion resistant aluminum alloy divided to ½ degrees. Double opposite verniers read to 1 minute. Fully protected by removable guard.

22 power coated optics. One piece 10½" bronze telescope with internal focusing. Focuses from 3 feet to infinity. Resolving power of 4 seconds. Reticule stadia lines at fixed ratio of 1:100. Telescope transmits from either end.

Telescope vial—precision ground to sensitivity of 40 seconds per 2 mm division.

2 plate level vials—precision ground to sensitivity of 80 seconds per 2 mm division. Bronze repeating centers. Bronze leveling head. Fully enclosed nickel silver leveling screws precisely fitted into replaceable bronze bushings.

Water resistant, dustproof compass. 3" needle. Graduated to ½ degrees. Adjustable for declination. Optional \$27.00 extra.

Mahogany transit case, sunshade, plumb bob, magnifier, spanner wrench, adjusting pin and screw driver.

Tripod, stiff or extension, regular or wide frame tripod available—not included in instrument price.

LOW COST TRANSIT-LEVEL FOR CHECKING INTERMEDIATE STEPS—the Berger Master Builder Convertible Transit Level reads to 5 minutes. Only \$197.50 (tripod extra).

C. L. Berger & Sons, Inc., Williams Street, Boston 19, Mass.

- ☐ Send name of nearest Berger Dealer
☐ Send literature on Polara ☐ Master Builder

Name _____

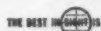
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For more facts, use coupon or circle No. 324

Book reports on plastics as building materials

■ Structural Plastics Associates, Belmont, Mass., has published "Plastics as Building Construction Materials," a 129-page report prepared by graduates of the Harvard Graduate School of Business Administration.

Divided into eight chapters, the book discusses problems which stand in the way of the widespread acceptance and use of plastics as structural and semistructural materials, and presents several courses of action design to overcome these problems. The text is supplemented by statistical data, graphs, and diagrams.

Subjects covered in the chapters include: applicability of plastics to building construction; terminology and standards problems; building codes; trends affecting the acceptance of plastics as building materials; influence groups; manufacturing and construction problems; and cost analysis.

The book may be obtained from Structural Plastics Associates, P. O. Box 13, Belmont 78, Mass., at \$18.50 per copy.

American Tractor names

■ Lewis W. Schmitt has been appointed consulting engineer for the American Tractor Equipment Corp., Oakland, Calif.

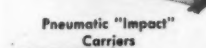
Schmitt, who has had more than 20 years of engineering and sales experience in the mining and construction-equipment fields, will be in charge of development and sales of Ateco rippers and custom forgings. He will service the company's western territory.

B-L-H division news

■ The sales promotion department of the Construction Equipment Division of Baldwin-Lima-Hamilton Corp., Lima, Ohio, has been reorganized to include advertising, technical data, and parts-catalog functions.

Edward J. Fiddes, formerly sales manager of the Lima Work's Road-packer department, has been named sales promotion manager. He will also be in charge of the company's training program at Lima.

MORE QUALITY ENGINEERED FEATURES IN STEPHENS-ADAMSON CARRIERS



ADVANTAGES

- Spun-end roller assemblies and parts interchangeable for quick installation.
- One-Piece, all-steel, welded frame construction.
- Positive lubrication... pre-lubricated at factory... provisions for field lubrication.
- Roller brackets tilt two degrees in direction of travel for greater belt training effect.
- Die-cast labyrinth bearing seals keep grease in... dust and dirt out.

WRITE FOR BULLETIN 760

STANDARD PRODUCTS DIVISION
STEPHENS-ADAMSON MFG. CO.
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PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA
CLARKSDALE, MISSISSIPPI • BELLEVILLE, ONTARIO
For more facts, circle No. 325

Wiley BOOKS

An Introduction To TRANSPORTATION ENGINEERING

By WILLIAM W. HAY, Univ. of Illinois. Sets forth those principles common to all transport systems. Shows the relationships between technological and operating characteristics of transport facilities and efficient, economical operation. 1961. 505 pages. \$11.75

SIMPLIFIED ENGINEERING FOR ARCHITECTS AND BUILDERS

Third Edition

By HARRY PARKER, Univ. of Pennsylvania. Largely rewritten to include the new unit stresses and specification requirements, which are used in the discussions and problem solutions. Only elementary algebra is needed to work the problems. 1961. 325 pages. \$7.00

PRESTRESSED CONCRETE, Vol. 2

By YVES GUYON. Covers statically indeterminate, prestressed concrete structures, dealing with elastic design and with special reference to theory of the concordant cable. Also treats ultimate-load design and theory of the plastic hinge, including a valuable section on structural behavior of prestressed slabs.

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Vol. 1: with revision supplement. 1960. 559 pages. \$16.25

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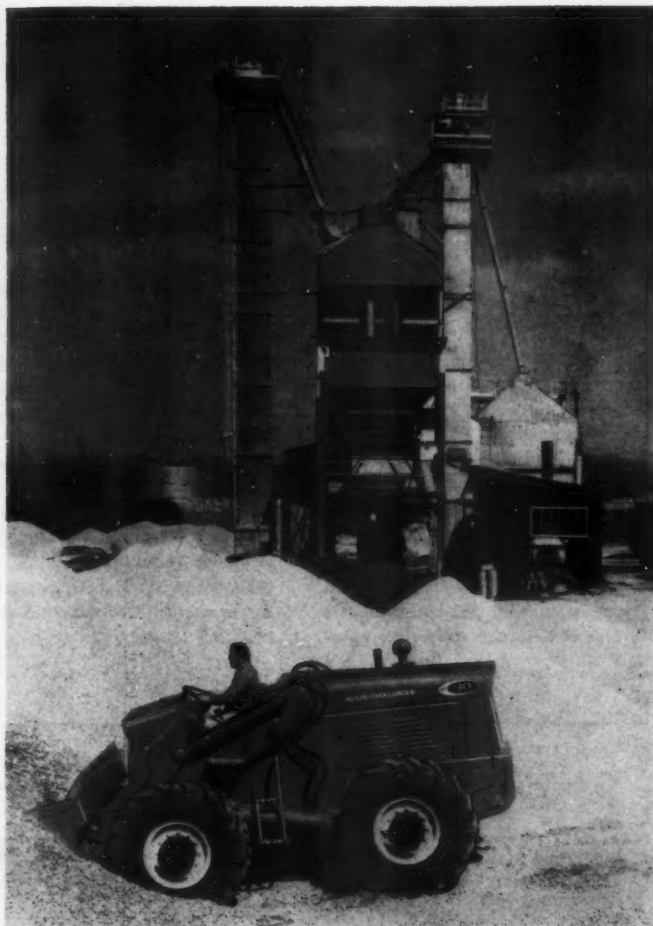
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INEERS



For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.



Tractor loader takes up to 6-yard bucket

Allis-Chalmers has expanded its line of tractor loaders to six models with the introduction of the new TL-30, a 4-wheel-drive unit featuring a 10,500-pound carrying capacity and a lifting capacity of 25,000 pounds.

The new loader—largest in the company's line—is powered by an A-C turbocharged diesel engine with a rating of 184 horsepower at 2,200 rpm.

A single lever permits power shifting on the go at any speed and in either forward or reverse, a feature said to allow the operator to easily move into a stockpile and instantly drop into low crowding speed for full-capacity loading, and to reverse direction instantly.

Six buckets, ranging from 2½ to 6 cubic yards, are available.

The TL-30 also features a maximum dumping clearance of 10 feet 4½ inches, and a 37½-inch reach forward from the tires for center loading of high, wide truck bodies. Operator safety, comfort, and convenience features include air service brakes, a mechanical parking brake, a 6-way adjustable foam-rubber seat, and power steering.

A number of special attachments and accessories are available.

Write to the Allis-Chalmers Mfg. Co., Dept. C&E, Box 512, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 119.

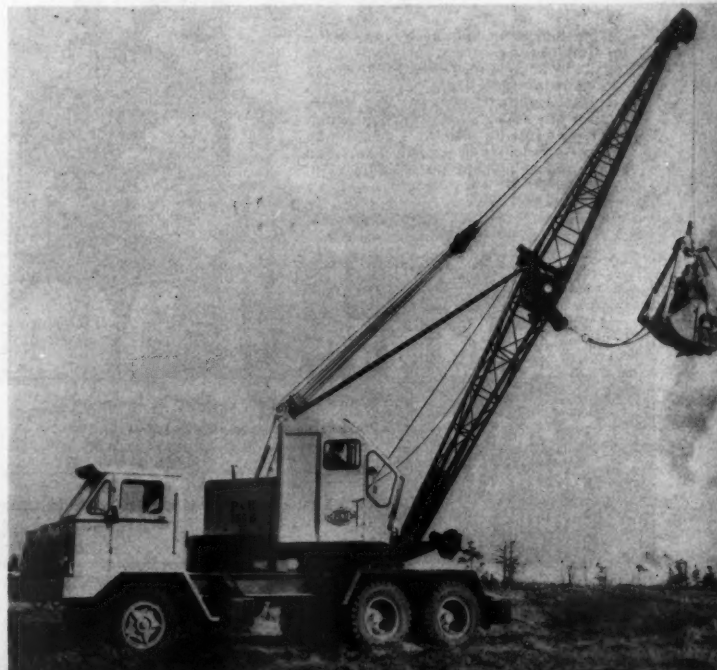
New excavator offers economy and power

A 15-ton-capacity truck-mounted excavator said to couple big-model power with smaller-model economy has been announced by Harnischfeger Corp.

Company officials report the new Model 155B-TC has many features offered only optionally on other machines, and that it is designed well within vehicle-width and axle-weight requirements of all states—factors contributing to economy of operation.

Among the new model's features is Power Box design, a system in which major gears and shafts are completely encased and continually lubricated. Another feature is P&H planetary gear-type boom hoist, which both raises and lowers the boom under power.

Write to the Construction & Mining Division, Harnischfeger Corp., Dept. C&E, 4445 W. National Ave., Milwaukee 46, Wis., or use the Request Card at page 18. Circle No. 118.



This new 40-yard scraper, largest in the Euclid line, incorporates a new ejector system said to eliminate the dumping problem, a major difficulty in the development of large-capacity scrapers.

Offer 40-yard scraper with new ejector system

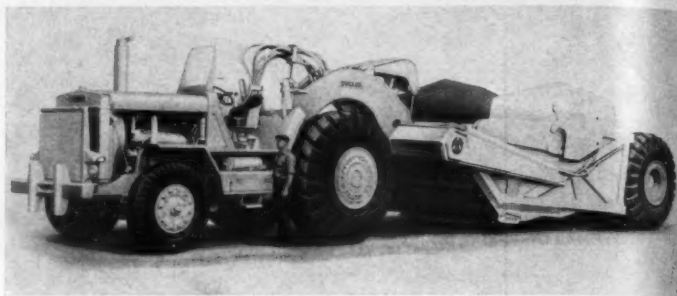
The Euclid Division of General Motors Corp. has announced its largest scraper—the Model SS-40 six-wheeler. The new earthmover has a struck capacity of 40 cubic yards and a heaped capacity of 52 yards.

Designed for high-production jobs, with long, high-speed hauls at speeds up to 34 mph, the SS-40 is powered by a GM 12-cylinder diesel engine delivering 432 horsepower. It is equipped with an Allison Torqmatic drive having four forward and two reverse speed ranges.

All scraper operations—bowl, apron, and ejector—are completely hydraulic with no cable connections. A special

feature is the double ram-actuated push-out, roll-out ejector. According to the manufacturer, this combination of forces provides extra power at the beginning to overcome inertia with maximum speed at the end of the stroke and a final snap action for fast, clean shedding of the load. This new ejector is said to eliminate the dumping problem that has been a major obstacle in the development of large-capacity scrapers.

The radial-design power apron is another important feature incorporated into the SS-40. Because it is designed on a true radius, the apron does not carry a heavy load of dirt



and so can raise more easily. Also, hydraulic power closing helps hold on to those last few hard-to-dig yards; this is particularly important when loading sand and other free-flowing materials. The bowl is raised and lowered by a single hydraulic jack.

Width of cut is 11 feet 4 inches.

Maximum depth of cut is 14 inches.

Front tires are 14.00 x 25; drive tires 33.5 x 33; and scraper tires 37.5 x 33.

For further information write to the Euclid Division, General Motors Corp., Dept. C&E, Hudson, Ohio, or use the Request Card at page 18. Circle No. 19.



Austin-Western's new Model PR-11 roller is capable of maximum compactive effort of more than 90 psi.

Introduce new 9-wheel pneumatic-tire roller

A new 9-wheel pneumatic-tire roller has been introduced by the Austin-Western Division of Baldwin-Lima-Hamilton Corp.

Designed for capacities of 4 to 11 tons, the roller—known as the Model PR-11—is capable of maximum compactive effort of more than 90 psi, with optional high-inflation tires.

Features include Warner 4-speed transmission with full-power shuttle reverse and torque converter, auto-

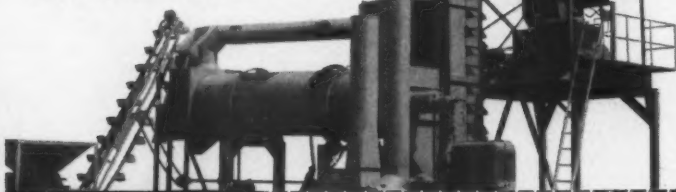
motive-type power booster steering, all-wheel oscillation to maintain uniform compression, 6-ply tires, and 152-gallon sprinkler water tank. Wheels are individually removable for quick change.

For further information write to the Austin-Western Division, Baldwin-Lima-Hamilton Corp., Dept. C&E, 601 N. Farnsworth Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 2.

Make your own asphalt

6 to 60 ton models at low cost

Get blacktop when and where you want it—for dollars less. Do suburban streets, repair city and county roads. Put in drives and parking areas. Plant pays for itself, often in a year or two. All five White models mix AC, RC, MC, SC and emulsion. For full details mail coupon to White—specialists in asphalt plants and other road equipment since 1920.



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plants

White Mfg. Co., Elkhart 9, Indiana
Please send catalogs on low-cost asphalt plants.

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Address _____
City _____ State _____

For more facts, use coupon or Request Card at page 18 and circle No. 327

J - RAM

Another
RELIABLE tamper by Jay

Compacts clay fast • Saves on labor • Cuts downtime

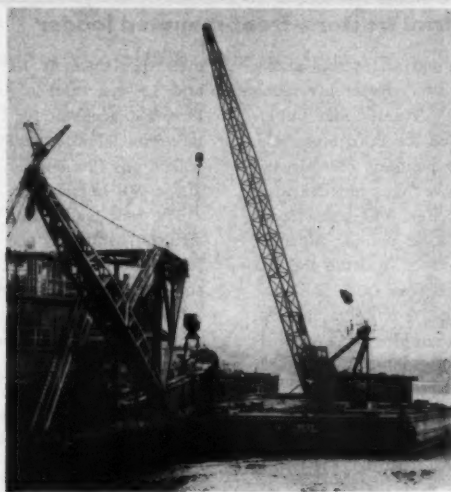
This new Jay Tamper gives better, faster earth compaction. Savings up to 90% and more. Easy to meet Proctor density spec. . . . under foundations, in ditches, under slabs. Weighs only 135 pounds. Engine 4-cycle, cast-iron—450 to 675 blows per minute. Choice of tamping plates. Saves "downtime" expense. Get a demonstration; find how Jay Tampers can save and EARN money for you.



JAY tampers

Jay Company Division, J. LEUKART MACHINE CO., INC.
2222 S. Third Street, Columbus 7, Ohio

For more facts, use Request Card at page 18 and circle No. 328



Compact revolving crane with 50-ton capacity

A new full-revolving, pillar-mounted crane, said to feature simplicity of design and minimum space requirements, has been introduced by R. G. LeTourneau, Inc. The 100,000-pound-capacity all-electric unit has a total weight of only 60,000 pounds.

The low space requirement of the RD-120 is the result of single-column mounting and short tail-swing design. The compact configuration is attributed to a new high-strength steel that permits reduced column size, plus special single-point suspension of the swing table that eliminates counterweights, hook rollers, and live roller circle.

Further compactness is gained through the simplicity of the all-electric drive system, the manufacturer reports. Each crane function is direct-driven by an individual high-torque LeTourneau Electric Gearmo-

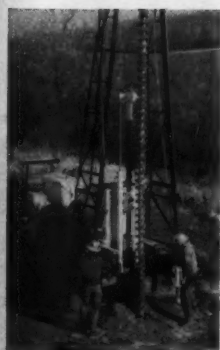
tor. Thus clutches, transmissions, and long power-transfer systems are eliminated.

Separate electric switches actuated by fingertip pressure govern hoisting, luffing, and swing, and permit individual or simultaneous operation of each function to speed handling cycles. Operating power for ac-powered hoisting and luffing and dc-powered swing is supplied by LeTourneau ac and dc generators directly coupled to a 275-hp diesel engine.

Standard boom length is 80 feet, with a capacity of handling 50 tons at a radius of 25 feet. This crane is also obtainable with a 100-foot boom.

For further information write to R. G. LeTourneau, Inc., Dept. C&E, 2399 S. MacArthur, Longview, Texas, or use the Request Card at page 18. Circle No. 49.

ACKER DOUBLE-DUTY RIG FOR AUGER BORING OR CORE DRILLING!



Acker SP handles 5 foot hollow-stem or conventional auger flights. Switches to roller rack, carbide, saw teeth or diamond bit coring. The SP handles angle or vertical holes, deep or shallow in any formation.

Core drilling or augering problems anyone? Just name it—the Acker SP will tame it! It's rugged and versatile... switches from core boring to augering. It has muscle to auger 300 feet or core to 1500!

Acker's SP is designed for heavy duty service. It has a four speed cathead hoist, built-in reverse and four speed transmission. It's completely self-contained and mounts on truck. Owners of the SP are reporting unprecedented results drilling and augering for soil samples, in hollow stem augering and geophysical and geological exploration.

For more information write for Bulletin 31-ST or have us demonstrate the versatility of this advanced rig. There's no obligation!

ACKER DRILL CO., INC.

P. O. BOX 830 • SCRANTON 2, PA.

For more facts, use Request Card at page 18 and circle No. 329

Offer package assembly for vibrating screed

For the contractor who wants to build his own wooden vibrating screed beam, Stow Mfg. Co. is offering a complete package assembly, including Power Pak, mounting brackets, end rollers, and winches. Making his own screed beam saves the contractor the freight on the beam, and makes it convenient to fabricate beams on the job as they are needed for different-width slabs, the company declares.

The Power Pak for this screed package has a Briggs & Stratton 3-hp engine and an adjustable-amplitude vibrator head that makes it possible to adjust for any amplitude by simply

loosening a set screw and turning the eccentric on its axis, using dial settings, and then locking it in position. The end roller assemblies that support the beam have rubber mounts to isolate the rails from the beam's vibration.

Complete directions are furnished by the manufacturer for building a wood steel-shod screed beam. If wanted, the steel channel on the bottom can be furnished, along with the proper bolts, nuts, and washers.

For further information write to the Stow Mfg. Co., Dept. C&E, 40 Shear St., Binghamton, N. Y. or use the card at page 18. Circle No. 15.

SILENT HOIST sets the pace again...



2 SIZES:
MODEL FAX—12,000 lbs. cap.
MODEL FAY—20,000 lbs. cap.

5 SIZES:
1½, 2½, 5, 10, 12½ tons

360° BOOM SWING—Now... another addition to the famous family of Silent Hoist KRANE KAR... the original Mobile Swing Boom Crane! **BOOM ROTATION:** All-Hydraulic 360° continual rotation on heavy-duty double-race ball-bearing turntable. **BOOM:** 15/22 ft., manual or hydraulic telescoping. **TRANSMISSION:** Hydraulic power shift directional in combination with flywheel torque converter. **STEERING:** Full time power steering, finger-tip control. **ENGINE:** Heavy duty 6 cylinder valve-in head type. **BOOM TOPPING:** Horizontal to highest vertical in only 8 seconds. **BOOM HOISTING:** Load block 3 parts of line 25 to 55 fpm. **TIRES:** Dual pneumatic tires on traction axle for high flotation and extra blow-out protection. **TOTAL VISION AND SAFETY:** No obstruction in any position of load or crane; operator fully protected through 360° rotation of boom. Write for complete details in illustrated bulletin #79.

180° BOOM SWING—The Standard widely favored All-Hydraulic or Mechanical 180° swing boom crane models. Lifts, carries, and places any load up to 12½ tons. One engine powers the machine for travel and all crane applications—finger-tip control. Front traction wheel drive supports chassis and crane load. 2 geared speeds for hoisting, topping, and swinging. No tail swing—Boom never passes over Operator's head. Write for complete details in illustrated bulletin #79.

SILENT HOIST & CRANE CO.
BROOKLYN 20, N. Y.

For more facts, use Request Card at page 18 and circle No. 330



A wall panel constructed of concrete block held together by Raybestos Threadline mortar is being tested for strength. It was lifted, laid down, picked up, and jostled by the crane's boom in an attempt to break the wall joints. The wall held successfully, while an identical panel, constructed with ordinary mortar, was destroyed with a slight jolt of the crane's boom. Epoxy in the new mortar makes the joint stronger

than bricks or concrete block. Easily mixed and applied, Threadline mortar is said to make possible entirely new design features employing concrete block. For further information write to Raybestos-Manhattan, Inc., Adhesives Dept., Dept. C&E, Bridgeport 2, Conn., or use the Request Card at page 18. Circle No. 99.

New industrial tractors, front-mounted loader

Two new industrial tractors and a new front-mounted loader are being marketed by the Tractor and Implement Division of the Ford Motor Co.

According to company officials, the new tractors have many new features, including cast-steel one-piece front axles rated at 5,000 pounds capacity, power steering, foot throttle, comfort seat, and rugged rear axles. Both use Ford's Red Tiger 4-cylinder, in-line, overhead-valve engines and are available with diesel, gasoline, and LP-gas fuel options.

The Model 4000 uses a 172-cubic-inch displacement for all three fuels, while the 2000 features 134-cubic-

inch displacement for the gasoline and LP-gas models and 144-cubic-inch displacement for the diesel. The larger model produces 62.5 horsepower with a gasoline engine; the 2000 produces 48.4 horsepower.

The new loader has a step-on design to permit easy access to the tractor seat from the side, and unobstructed forward and side vision. With 2,000-pound lift capacity and 4,000-pound breakaway capacity, it is recommended for installation on the Model 4000 tractor. It features a cycle time of 12 seconds for load, raise, dump, and return to loading position.

Depending upon which bucket is used, the Model 720 has a maximum dump height of 8 feet 5½ inches and a reach into truck bodies of 31½ inches. Two buckets—a 40-inch ½-cubic-yard stockpile and a 60-inch high-backed tread width—are available.

For further information write to the Ford Motor Co., Tractor and Implement Division, Dept. C&E, 2500 E. Maple Road, Birmingham, Mich., or use the Request Card at page 18. Circle No. 125.

Announce new models of centrifugal pump

Portable engine-driven centrifugal pumps in 1½ and 2-inch sizes have been added to the Rapidayton line of the Tait Mfg. Co.

Known as the Rapidayton Nomad, these self-priming pumps are made of an aluminum alloy that is said to combine light weight with great strength and abrasion resistance. A hand grip makes the units easy to carry. Weight is approximately 42 pounds.



The Rapidayton Nomad pump.

Powered by Briggs & Stratton 4-cycle air-cooled engines with recoil starter, the new models are equipped with a 2-hp motor in the 1½-inch size and a 3-hp motor in the 2-inch size.

Total head for both models exceeds 90 feet, with capacities ranging beyond 5,000 gph for the 1½-inch size and beyond 7,200 gph for the larger unit. Both pumps are built to handle water with a high percentage of solids without clogging, the manufacturer reports.

For further information write to the Tait Mfg. Co., Dept. C&E, 500 N. Webster St., Dayton, Ohio, or use the Request Card at page 18. Circle No. 59.

Are you running **TWO** plants for **ONE** plant production?

We invite your consideration of the

H & B Single Duty and Double Duty T-100 plant arrangements



SINGLE DUTY

DRYER

124" dia. x 44" long

ELEVATOR

24" x 10" AC Buckets @ 12" centers on X-859 chain

SCREEN

Two 3½ deck—4' x 14' assemblies

HOT BIN

4 compartment—100 tons capacity

MIXER

Twin shaft jacketed type with 103 cu. ft. volume below center line of shafts

*DOUBLE DUTY

DRYER

TWO 100" dia. x 36' long units

ELEVATOR

TWO units, with 18" x 10" AC buckets on SS-856 chain

SCREEN

TWO 3½ deck—5' x 16' assemblies

HOT BIN

4 compartment—150 tons capacity

MIXER

Twin shaft jacketed type with 103 cu. ft. volume below center line of shafts

*(May be operated with one dryer—elevator—screen section only for medium production, or with both sections for maximum production.)

HETHERINGTON & BERNER INC.

A Wholly Owned Subsidiary of American Hoist & Derrick Company
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America's First
Builders of
Asphalt
Mixing
Equipment



Cable layer for use with tractor models

Kelley Products Division of Crutcher-Rolfs-Cummings, Inc., has announced a cable-laying attachment for all models of Caterpillar crawler tractors equipped with a Cat hydraulic control unit. The new machine lays cable precisely at specific depths in a fraction of the time formerly required and with 60 to 90 per cent less cost, according to the manufacturer.

The new attachment lays cable or wire up to 3½ inches outside diameter at depths ranging from a 12-inch minimum with the D4 to a 72-inch maximum with the D9 tractor.

New clamp simplifies forming operation

A new and reportedly simpler method of forming concrete has been announced by Kwik-Lock Form Co.

The method makes use of a new clamp with pivot-action adjustment. Not only can the form panels be joined as soon as they are placed in position, but they reportedly can be aligned without "V-ing."

All parts of the new hardware are interchangeable and engineered to fit perfectly at each joint. The only tool required to set up the Kwik-Lock form system is a hammer. Each heavy-duty steel clamp is self-adjusting; thus, the company reports, workmen can join panels on wale pins quickly and easily and in proper alignment.

For further information write to the Kwik-Lock Form Co., Dept. C&E, 18100 Rialto, Melvindale, Mich., or use the Request Card at page 18. Circle No. 27.

Magnetic sweeper has 8-foot path

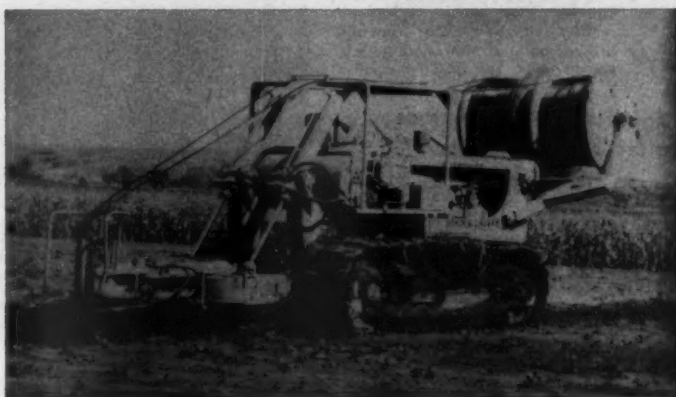
A magnetic sweeper with a sweeping path of 8 feet and a speed of about 5 mph is offered by the W. E. Grace Mfg. Co.

The new unit will pick up any magnetic particles, such as scrap iron, nails, tin cans, etc., the manufacturer reports. A 5-kw 120-volt dc generator is driven from the tractor rear power takeoff. The magnet is strong enough to pick up a 450-pound plate from a height of 4 inches and will pull rather large scrap-iron pieces through loose gravel, the company claims.

For further information write to the W. E. Grace Mfg. Co., Dept. C&E, 6003 S. Lamar St., Dallas, Texas, or use the Request Card at page 18. Circle No. 54.

Shanks are available in a variety of cable-matching sizes and widths to reduce drag or line pull and possible damage to the cable. Shanks are of high-alloy, wear-resistant steel with replaceable leading edge and point. The cable guide or conduit, attached to the ripping shank with hardened pins, opens for easy removal or insertion of cable.

For further information write to the Kelley Products Division, Crutcher-Rolfs-Cummings, Inc., Dept. C&E, P. O. Box 2073, Houston, Texas, or use the Request Card at page 18. Circle No. 8.



The new Kelley cable layer, shown here working on a Cat D8, is said to provide savings in both time and cost.



Geared by FULLER

TOTAL GCW 137,000 LBS.

10 Axle—15 Speed "Michigan Special"

This ten-axle Autocar was custom designed specifically to haul core sand over Michigan's highways. Completely within the 55-foot length limit and conforming in every way to axle-weight laws, the "Michigan Special" is powered by a Cummins 290-hp NHS through a fast-shifting Fuller Model 15-B-1120 Transmission designed especially for this rig. The axle ratio is 7.54:1, and the maximum GCW is 137,000 pounds.

It takes real power and fast shifts to move 93,000 lb. payloads from a dead stop to highway speeds. The Fuller

15-B-1120 fits the bill perfectly.

Proved by years of the most exacting operations, the Fuller Model 15-B-1120 Transmission combines a 5-speed main and a 3-speed Auxiliary Transmission into one single unit with 15 closely spaced ratios for top performance. The single-unit construction allows short-wheelbase installation and eliminates the weight of support brackets, cross members and a propeller shaft. An extra, SAE eight-bolt, heavy-duty PTO opening on the right side provides a source of power for the heaviest of winches.

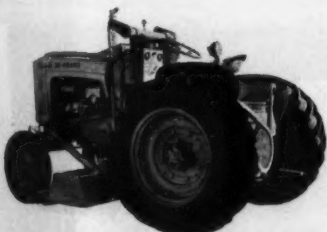
GEAR RATIOS 15-B-1120

Speed	Split	Ratio	% Step
15	O'Drive-High	.537	19
14	O'Drive-Int.	.64	24
13	O'Drive-Low	.794	6
12	Direct-High	.84	19
11	Direct-Int.	1.00	24
10	Direct-Low	1.24	19
9	3rd-High	1.48	19
8	3rd-Int.	1.76	24
7	3rd-Low	2.18	19
6	2nd-High	2.59	19
5	2nd-Int.	3.08	24
4	2nd-Low	3.82	44
3	1st-High	5.49	19
2	1st-Int.	6.54	24
1	1st-Low	8.11	

FULLER TRANSMISSION DIVISION
EATON MANUFACTURING COMPANY
KALAMAZOO, MICHIGAN

Sales & Service: West. Dist. Branch, Oakland 6, Cal. • Southwest Dist. Office, Tulsa 3, Okla. • Automotive Products Co., Ltd., Brock House, Langham St., London W.1, England, European Rep.

For more facts, use Request Card at page 18 and circle No. 332



This Photo/File survey truck photo-records highway data from the driver's point of view. Film may be shown on a screen.

Highway survey system collects data on film

A new method of photo-recording highways from the driver's point of view has been announced by Aero Service Corp. Called Photo/File, the recording system employs a specially modified 16-mm camera mounted at the front of a special vehicle.

According to Aero engineers, the Photo/File survey service is useful to highway engineers for sufficiency rating studies, as-built surveys, inventories of signs and other roadside conditions, roadway-redesign study, maintenance-need surveys, etc.

The Photo/File vehicle can survey at 5 to 60 mph, continuously recording the highway situation at 52.8-foot intervals. The film records can be projected on a large screen for conference studies or presentations to civic groups. Ten thousand miles of highway can be recorded on 500 rolls of 16-mm film and stored in a filing cabinet for quick reference.

The new service is reported to be much less expensive than other methods using still cameras or detailed observation and notes.

For further information write to the Aero Service Corp., Dept. C&E, 210 E. Courtland St., Philadelphia 20, Pa., or use the Request Card at page 18. Circle No. 24.

Four models of new plastic-lined cooler

Igloo Corp. has added four new plastic-lined models to its line of coolers. The new models are available in 2, 3, 5, and 10-gallon sizes, for either hot or cold liquids.

Urethane foam has been applied as insulation inside the galvanized-steel wall of these models. A new seamless plastic liner holds the liquid. The recessed spigot is of molded plastic.

For further information write to the Igloo Corp., Dept. C&E, P. O. Box 7185, Memphis 18, Tenn., or use the Request Card at page 18. Circle No. 52.



Aluminum-base coating protects metal, wood

Rust-Oleum Corp. is offering 1960 Green Aluminum, a protective coating, for use indoors or out, designed to produce a tough, durable, attractive finish on metal, wood, or masonry. It is said to be particularly suitable as a top coat on structural steel.

For best results, the new coating should be sprayed on, according to the company, but roller or brush may also be used.

For further information write to the Rust-Oleum Corp., Dept. C&E, 2799 Oakton St., Evanston, Ill., or use the Request Card at page 18. Circle No. 57.

'61 FORD TANDEM AXLE TRUCKS BROADER WARRANTIES... GREATER DURABILITY... BIGGER CHOICE!



FORD DIVISION, Ford Motor Company.

Truck mixer handles 7½-yard payload

The T. L. Smith Co. announces the availability of a new truck mixer said to offer many states a 7½-yard legal payload for the first time. The aluminum-and-steel truck mixer reportedly boosts legal payloads as much as 2,300 pounds per trip.

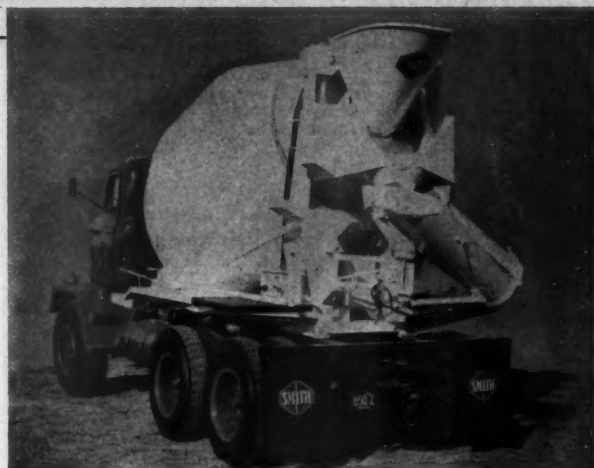
According to Smith engineers, the extra legal payload has been accomplished with no sacrifice in structural strength or resistance to abrasion and impact. Lightweight aluminum alloys are used in the frame, torsion bar, platform, spout, and chutes.

High-strength abrasive-resistant steels are used for drum, gears, trans-

mission rollers, and other parts subjected to heavy wear.

The company further reports that the new unit has been custom-designed for maximum legal operation in those states with 32,000-pound rear axle, 50,000-pound gross weight laws. In extensive field tests, carrying 7½ yards of 4,100-pound concrete, the mixer and payload have scaled out at 36,665 pounds.

For further information write to The T. L. Smith Co., Dept. C&E, 2835 N. 32nd St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 31.



This new T. L. Smith aluminum-and-steel transit mixer boosts legal payload.

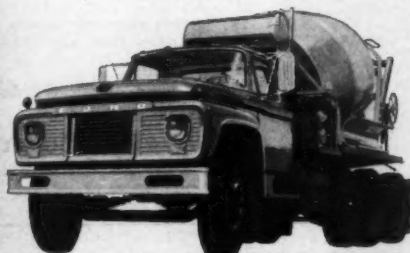
FORD HAS WARRANTED TO ITS DEALERS, WHO IN TURN WARRANT TO YOU:

- New Super Duty V-8 Engines for 100,000 miles or 24 months!
- New Ford Trucks for 12,000 miles or 12 months!

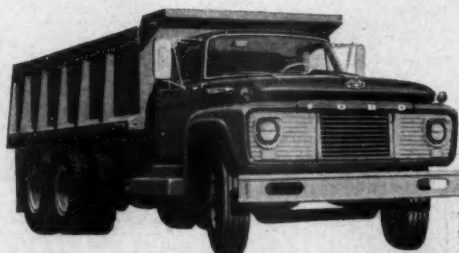
Ford's rigid quality control program gives you unsurpassed dependability! Positive evidence of uniformly high production and inspection standards is the exclusive new 100,000-mile engine warranty. On 401-, 477- and 534-cu. in. Super Duty V-8 engines, each major engine part (including block, heads, crankshaft, valves, pistons, rings), when engine is used in normal service, is warranted by your dealer against defects in material or workmanship for 100,000 miles or 24 months, whichever comes first. Warranty covers the full cost of replacement parts . . . full labor costs for the first year or

50,000 miles, sliding percentage scale thereafter.

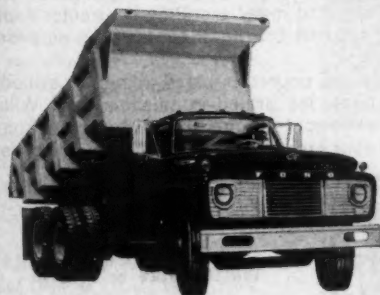
In addition, an extended warranty covers all 1961 Ford Trucks of any size. Each part, except tires and tubes, is now warranted by your dealer against defects in material or workmanship for 12 months or 12,000 miles, whichever comes first. The warranty does not apply, of course, to normal maintenance service or to the replacement as normal maintenance of such items as filters, spark plugs and ignition points. *No other trucks give you such protection for your investment; never before could you be so confident of long-range durability!*



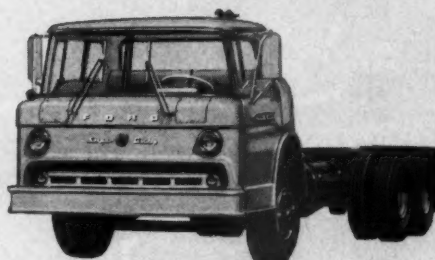
Tougher tandems offer greater strength in chassis, cab and sheet metal for longer life. Full-Torque fly-wheel power take-off is available for more efficient drive of transit mixers and heavy-duty equipment.



Timken or Eaton rear axles, with capacities up to 38,000 lb., are available in all Super Duty tandems. High capacity front axles have wider track for increased stability when cornering or in rough terrain.



GVW's up to 51,000 pounds permit big, profitable payloads. Heavier gauge metal and stress-isolating independent mounting for radiator, fenders and cab give you greater durability.



Tandem Axle models are available with tilt cabs. As with conventional tandems, aluminum walking beams, wheels and fuel tanks are offered to cut weight . . . increase payload capacity.

New packaged unloader handles concrete block

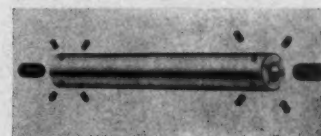
The Side-O-Matic Model T-SF is a new motorized, packaged unloader for concrete blocks and other building materials. The self-contained unit comes fully wired and with all controls in place; the user has only to bolt it to the bed of a truck or trailer.

The boom of this new unit has a 365-degree turning radius and a maximum load capacity of 4,500 pounds. The fork will reach to an excavation as deep as 13 feet, while the reach from the center of the truck is 16 feet. A push-button control provides easy, positive fingertip operation, the manufacturer reports.

For further information write to the Side-O-Matic Unloader Corp., Dept. C&E, P. O. Box 1561, York, Pa., or use the Request Card at page 18. Circle No. 69.

New-type master pin for crawler tracks

A new type of master pin for crawler tracks has been introduced by the Tractor Division of Lempco Automotive, Inc. According to the manufacturer, the new Lempco pin retains its full strength after being locked in place in the link, unlike master pins which are said to be appreciably weakened by slots in their drilled ends.



The end plugs, when driven in, exert outward pressure on four small lock plugs, forcing them to dimple or imbed in the link and to lock the master pin securely, without impairing its original strength.

The end plugs are tapped and may be quickly removed when disassembly is required by simply inserting a bolt or cap screw in the tapped hole.

For further information write to the Tractor Division, Lempco Automotive, Inc., Dept. C&E, 5546 Dunham Road, Bedford, Ohio, or use the Request Card that is bound in at page 18. Circle No. 21.

QUALITY-BUILT...
MAINTENANCE-
ENGINEERED

FORD TRUCKS COST LESS

For more facts, use Request Card at page 18 and circle No. 333



Urethane foam insulation being sprayed on the underside of a highway bridge. It is said to prevent premature icing and lessen deck deterioration from de-icing salts.

New bridge insulation cuts premature icing

A new type of foam-plastic insulation for highway bridges, which can become dangerously icy even when approach roads are still safe, is being marketed by the Barrett Division of Allied Chemical Corp.

When sprayed on the underside of highway bridges, the urethane insulation is also expected to reduce the rapid deterioration of bridge decks caused by frequent freezing and thawing or by the use of large amounts of de-icing salts, according to the company.

Barrett officials report that when the underside of a bridge is insulated with urethane, it has practically the same rate of heat loss as a road surface. Therefore, it will not ordinarily become iced before the approach pavements. One inch of urethane is said to have about the same insulating capabilities that 2 to 5 feet of earth provide beneath a road surface.

An area of urethane insulation 1 foot square and 1 inch thick weighs only about 3 ounces, so its application does not present any structural problems. The foam is waterproof, and tests are said to show no significant chemical or physical change through aging.

The insulation is applied by trained Barrett application personnel, using a specially designed spray gun that mixes two liquid components in its nozzle. The urethane foams up and solidifies in a matter of seconds and can normally be sprayed directly onto

concrete or steel without any surface preparations.

For further information write to the Barrett Division, Allied Chemical Corp., Dept. C&E, 40 Rector St., New York 6, N. Y., or use the Request Card at page 18. Circle No. 23.

New, larger models added to screen line

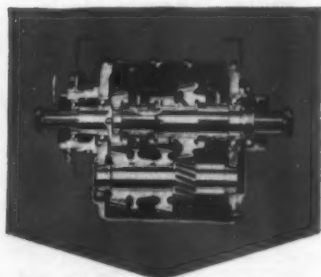
Kolman Mfg. Co. announces expansion of its line of aggregate screens with the addition of a number of new and larger sizes. Single-deck and double-deck screens up to 14 feet long and 72 inches wide are now being produced. Triple-deck screens are made in sizes up to 14 feet long

and 60 inches wide.

Outstanding features of these screens, according to the manufacturer, include light and compact design requiring a minimum of horsepower, vigorous vibrating action for large capacities, and high-speed operation said to be especially effective for fine screening.

Vibrating grizzlies are also available now in the Kolman line, as well as complete aggregate-washing plants employing either single-screen units or tandem screens.

For further information write to the Kolman Mfg. Co., Dept. C&E, 4922 W. 12th St., Sioux Falls, S. Dak., or use the Request Card at page 18. Circle No. 68.



Specify FULLER Specify the MODEL For medium-heavy duty trucks and tractors specify the FULLER '65 SERIES 3-SPEED AUXILIARY

- High capacity
- Widest range of ratios
- Top-mounted power take-off optional
- Low initial cost, reduced maintenance
- Available from all truck manufacturers on specification

65 SERIES (Medium-heavy-duty) RATIOS			
MODEL	SPLITTER RATIOS		DEEP REDUCTION
	High	Inter-mediate	
3-A-65	.754	1.00	2.221
3-B-65	.804	1.00	1.239
3-C-65	.754	1.00	1.239
3-D-65	.804	1.00	2.221
3-E-65	.804	1.00	1.74
3-F-65	.754	1.00	1.74
3-G-65	1.00	1.32	2.221
3-H-65	1.00	1.32	1.74

Specify the MODEL
FULLER TRANSMISSION DIVISION
EATON MANUFACTURING COMPANY
KALAMAZOO, MICHIGAN
For more facts, circle No. 334



JAEGER PosiJector TRASH PUMPS

- New 3" and 4" self-priming centrifugals pass and positively eject trash while pumping 20,000 and 46,000 gph. Highly efficient whether pumping dirty water or clean.
- "PosiJector" prevents recirculation of solids, channels them into discharge flow.
- Non-clogging strainer passes sticks, leaves.
- Heavy 2-bladed impeller passes solids to 2".
- Suction chamber unbolts for quick inspection, adjustment, cleaning.
- Ask your Jaeger distributor or send for Catalog PT-1.

THE JAEGER MACHINE CO.
Columbus 16, Ohio

For more facts, use Request Card at page 18 and circle No. 336



THE STRONG SURVIVE

Every small boy reading a Jack London thriller knows the Law of the Jungle. And in a free competitive society the same basic principle holds true: Only the strong survive.

A contractor's strength is in his organization and in his equipment. And many a drilling contractor depends on Williams earth boring machines to outproduce his competitors.

For drilled and poured in place piling, for drilled and belled caissons, for drilled-in-caisson work Williams units are second to none in productive capacity. Strengthen your organization with Williams diggers.

WRITE, WIRE or PHONE

for more detailed information available in our Technical Bulletins on each individual model. Direct inquiries to our distributor, factory or this publication.

Manufactured by
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Exclusive Distributor
JOSLYN MFG. & SUPPLY CO.
2101 CORINTH ST. • DALLAS, TEXAS

For more facts, use Request Card at page 18 and circle No. 335

Versatile new excavator is hoe, shovel, loader

Hydraulic Equipment & Shovel Co. announces production of the Yumbo, a versatile all-hydraulic hoe-loader-shovel.

The new excavator is manufactured in crawler and self-propelled models with a wide range of working attachments. The basic unit is also factory-mounted on crane-type carriers or is available for mounting on conventional trucks.

The unit's high-torque hydraulic motor swing arrangement and 50-ton enclosed double-row ball-bearing turntable provide continuous rotation in either direction with no dead

spot, permitting easy access to digging and loading, according to the manufacturer.

The Yumbo Model 35 offers a compact, powerful, rough-terrain crawler with an unusually low ground pressure, and features a high-torque piston-type hydraulic motor driving each track independently, eliminating the entire conventional center-pin drive and steering mechanism.

For further information write to the Hydraulic Equipment & Shovel Co., Dept. C&E, Box 36, Pearland, Texas, or use the Request Card at page 18. Circle No. 11.



The Yumbo is a new, versatile excavator, hydraulically operated, which combines the work capacities of a hoe, a shovel, and a loader.

Line of rapid-lowering portable winch hoists

The Lug-All Co. announces a new rapid-lowering series of portable winch hoists.

The operational advantages claimed for this system are that the user has complete control and may select either 'notch-per-cycle lowering for positioning work or rapid lowering, which lowers (or backs off tension) four notches per cycle.

The rapid-lowering models are available in capacities from ½ ton to 2 tons and with cable lengths up to 38 feet. These models are also equipped with reversible safety handles designed to yield before any working part is overloaded.

For further information write to The Lug-All Co., Dept. C&E, 355-E Lancaster Ave., Haverford, Pa., or use the Request Card at page 18. Circle No. 56.

New system simplifies post-tensioning work

A new, simple system for post-tensioning concrete, developed by Atlas Service Corp., is said to eliminate several time-consuming steps previously necessary.

Instead of special bolts, the Atlas system uses nails to hold the coil anchor and plate firmly in position. In addition, pockets for shims or nuts are eliminated through use of re-usable rubber thimbles.

The manufacturer states that effects of small construction discrepancies are minimized with the Atlas anchorage, since it is adaptable to tendons of various lengths. The basic Atlas anchorage uses standard 7-wire strand of ¾, 7/16, or ½-inch diameter.

For further information write to the Atlas Service Corp., Dept. C&E, 14909 Calvert St., Van Nuys, Calif., or use the Request Card at page 18. Circle No. 9.



"Idling engines manufacture sludge," says Mr. Carl P. New, Field Maintenance Supt., "and working conditions dictate filter change schedules." Mr. New carries a supply of WIX catalogs to make sure there's one available on each job.



J. A. Jones Construction Co. has men and machines all over the world...and a P.M. program goes with them!



Preventive Maintenance is a perpetual operation with J. A. Jones Construction Co., in the shop and in the field.

At right—Mr. R. C. Lum, Equipment Maintenance Supt., discusses filtration with a WIX Field Service Engineer.



FREE
Simplify your filter problems with a survey of your equipment made by a WIX factory trained Filter Specialist. Get the facts on the WIX Preventive Maintenance Record which tells at a glance the performance of every gasoline and diesel powered unit in your spread. Write today!



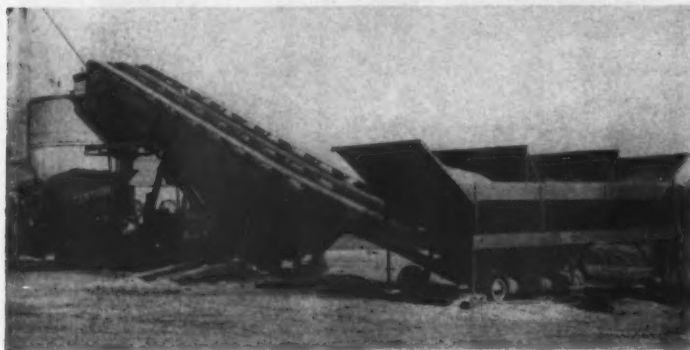
The J. A. Jones Construction Co. is a name familiar the world over where big projects need big equipment and men who think big. Preventive Maintenance (in many languages) is the byword in the Jones organization. WIX Engineered Filtration has been "on the job" in gasoline and diesel powered equipment, contributing dependable engine protection in this equipment at home and abroad.

WIX offers important P.M. advantages for engineers and contractors. Write for full information today.

WIX CORPORATION • GASTONIA, N. C.

In Canada: Wix Corporation Ltd., Toronto
In New Zealand: Wix Corporation New Zealand Ltd., Auckland

For more facts, use Request Card at page 18 and circle No. 337



Heltzel's Series 600 self-erecting mobile batching plant reportedly can be erected—without crane—and be ready for work in less than 3 hours.

New mobile batch plant is self-erecting unit

A new self-erecting, mobile batching plant, the Series 600, is offered by the Heltzel Steel Form & Iron Co. The new unit has a batching capacity of up to 190 cubic yards per hour.

A major feature of the new plant, in addition to its high production capacity, is that it can be moved and erected quickly and economically, according to the manufacturer. It is self-elevating; no crane is required for setting it up. For transport it is compact enough to be maneuvered through city traffic.

The plant is available as a ready-mix unit, central-mix plant, one-stop dry-batch paving plant, or two-stop dry-batch paving unit.

The aggregate storage bin, available with two or three compartments, has a total capacity of 54 tons. Loading may be by means of front-end loader or clamshell. The cement storage unit has a capacity of 350 barrels.

Separate conveyor belts for two or three materials carry the aggregates to the batcher. A choice of weighing systems is offered. Manual, semiautomatic, or fully automatic controls are available.

For further information write to the Heltzel Steel Form & Iron Co., Dept. C&E, Warren, Ohio, or use the card at page 18. Circle No. 123.

Announce new seeder for roadside work

A new landscape seeder said to have the flexibility to provide exact, accurate work on a wide variety of seeding jobs is announced by Deere & Co.

The new John Deere Model 265 seeder has a wide range of seeding settings and a similar wide range of performance for spreading fertilizer. It is recommended by the firm for roadside seeding and maintenance.

The new seeder is a 3-point-hitch unit that can be attached to or removed from any 3-point-hitch tractor in minutes. In one operation it finishes a prepared seedbed, applies a 6-foot band of seed and fertilizer, and then covers both. It operates at speeds up to 4½ mph.

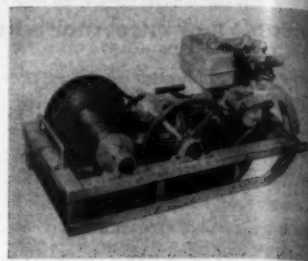
For further information write to Deere & Co., Dept. C&E, 3300 River Drive, Moline, Ill., or use the Request Card at page 18. Circle No. 37.

New portable winch for variety of uses

Superior Mfg. Co. announces a new portable winch for a variety of applications. Called Porta Winch, the unit is engineered to supply winch power in hand to reach locations where heavier equipment cannot be used.

According to the manufacturer, the Porta Winch is particularly suited for use in concrete-block plants, in contractors' equipment yards, etc.

The Porta Winch fits easily into a



pickup truck and is light enough to be handled by one man. Special features include a sled-type base, a

**COMPLETELY
NEW**

A MAJOR BREAKTHROUGH IN COMPACTER DESIGN!

No other pneumatic roller can match the performance, the features, or the versatility of the Hyster C500A. The design is the outstanding result of years of basic research on compaction methods for base course and asphaltic concrete. This machine will permit you to profitably meet the toughest specifications being written now... or in the future.

EVERYONE BENEFITS—CONTRACTORS, ENGINEERS AND THE PUBLIC.

'AIR-MATIC'
GROUND CONTACT
PRESSURE
CONTROLLED WHILE
ROLLING

CONTRACTORS AND ENGINEERS

safety stop to prevent loss of load, welded anchor chain, self-adjusting clutch, and steel cable roller.

For further information write to the Superior Mfg. Co., Dept. C&E, 5353 W. Broad St., Columbus 4, Ohio, or use the Request Card at page 18. Circle No. 78.

Grouser bar offered for larger crawlers

A large grouser bar designed to fit such big tractors as the Caterpillar D8 Series H and D9, Euclid TC-12,

International TD-25, and Allis-Chalmers HD-21 has been announced by Allied Steel & Tractor Products, Inc.

The new F-3 replacement bar is 2 1/16 inches high and 1 inch wide. It is made of wear-resistant alloy steel, and features Allied's special shape that reportedly cuts installation time up to 43 per cent.

For further information write to Allied Steel & Tractor Products, Inc., Dept. C&E, 7835 Broadway, Cleveland 5, Ohio, or use the Request Card at page 18. Circle No. 50.

The new Campbell Model Dy-354 cab for the Hy-Dynamic Dynahoe features large windows for good visibility.



Cab for new excavator has good visibility

The Campbell Detachable Cab Co. is offering the Model DY-354 cab for the recently announced Hy-Dynamic Co. Dynahoe.

The cab is constructed of galvanized sheet metal with 2 x 2 x 1/8-inch angle-iron braces. Windows are of safety glass mounted in locking rubber. The right-side window slides open for ventilation. All windows are large for good visibility in all directions.

The cab is 60 1/2 inches long, 41 1/2 inches wide, and 59 inches high. Weight is 670 pounds. It is painted yellow to match the new Dynahoe excavator.

For further information write to the Campbell Detachable Cab Co., Dept. C&E, Box 278, Wauconda, Ill., or use the Request Card at page 18. Circle No. 67.

Compact and sturdy traffic barricade

The new Esco Model EFS 4000 utility barricade, manufactured by Electronic Specialties Co., is designed for maximum visibility and economy, the manufacturer reports. Its compact, rugged construction is said to permit easy handling and hauling, and to reduce field damage and wear.

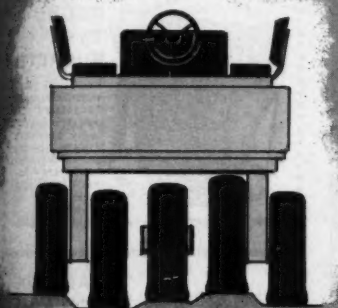
Among the unit's features are: heavy-duty angle-iron legs and cross bar; a customer name panel of 6 x 40-inch marine plywood; a barricade panel of 12 x 40-inch steel; and baked-on, high-grade implement enamel finish. The barricade takes one or two lights on a theftproof mounting.

For further information write to the Electronic Specialties Co., Dept. C&E, Island Ave., Batavia, Ill., or use the Request Card at page 18. Circle No. 62.

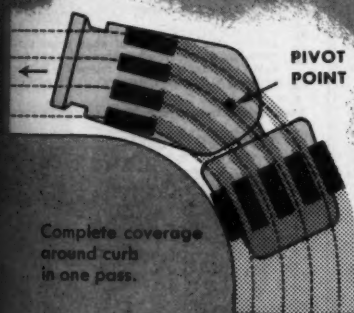


C500A PNEUMATIC COMPACTER

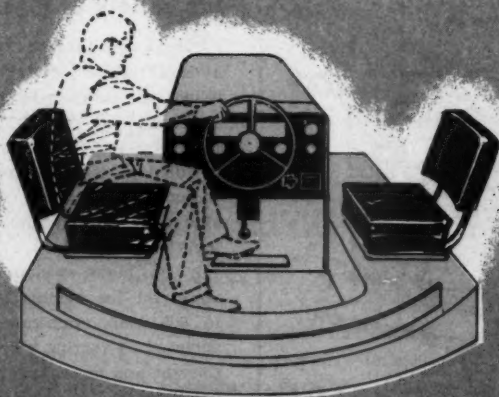
Meets the toughest specs...at a profit!



VERTICAL OSCILLATION. All 9 wheels oscillate in vertical plane only—provides uniform compaction and maximum traction. Eliminates tire scuff, lengthens tire life—prevents bridging low spots. Total oscillation is 4".



PIVOT POINT STEERING allows maximum maneuverability (90° inside turning radius) with identical steering in either direction. Maintains constant tire overlap for 100 percent coverage on any automotive type hydraulic power steering.



HUMAN ENGINEERED OPERATOR COCKPIT is centrally located and equipped with two adjustable seats and dual controls for maximum visibility from either side. Operator can easily see rolling pattern and curb line. Controls are placed to allow operation from standing or sitting position.

PLUS THESE IMPORTANT FEATURES:

- All gear drive sealed in oil
- Limited slip differentials
- Pressurized water spray
- Individually removable wheels
- One lever controls throttle and power shift forward-reverse
- Remote controlled tire pressure

THE ROLLER THAT BUILDS BETTER ROADS AT LOWEST COST—

HYSTER has it!

Call your Caterpillar-Hyster dealer for more details.

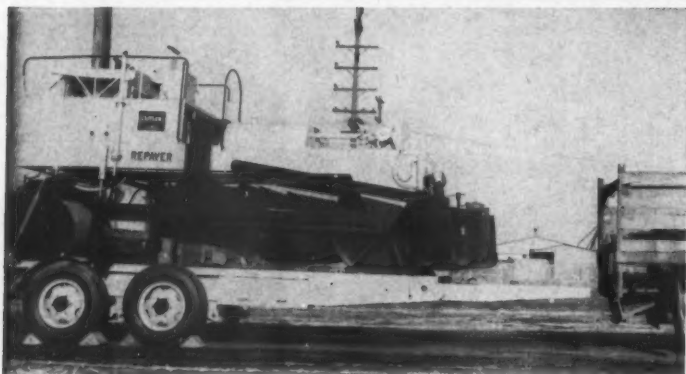
HYSTER COMPANY TRACTOR EQUIPMENT DIVISION
P. O. Box 328 • Peoria, Illinois



TRACTOR EQUIPMENT DIVISION - Construction and logging equipment
INDUSTRIAL TRUCK DIVISION - Lift trucks, mobile cranes, straddle carriers
MARTIN TRAILER DIVISION - Heavy machinery hauling trailers
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Manufactured in: Portland, Oregon (Home Office) • Danville, Ill. • Peoria, Ill. • Kewanee, Ill. • Australia • Brazil • England • France • The Netherlands • Scotland • Union of South Africa

For more facts, use Request Card at page 18 and circle No. 338

HYSTER "AIR-MATIC" TIRE INFLATION SYSTEM GIVES OPERATOR REMOTE CONTROL OF TIRE PRESSURE FROM COCKPIT AT ANY SETTING FROM 35 TO 150 PSI



This new tandem-axle trailer, designed for hauling the Cutler Repaver, can be pulled by a single-axle maintenance dump truck.

Trailer for hauling asphalt maintainer

Cutler Engineering Co. announces a new tandem-axle trailer designed to haul the company's recently announced Repaver. The trailer has been designed to haul the 12-ton asphalt maintainer behind a conventional single-axle maintenance dump truck without overloading.

The tandem-axle unit is equipped with 9.00 x 20, 12-ply pneumatic tires, conventional trailer springs, and axles. Air brakes are standard equipment for the unit.

The trailer is equipped with a hydraulic lifting jack that receives its power from the Repaver hydraulic system. One man can load or unload a Repaver in 15 minutes, the company reports.

For further information write to the Cutler Engineering Co., Dept. C&E, 5435 W. 63rd St., Chicago 38, Ill., or use the Request Card at page 18. Circle No. 17.

MORE PROFIT ON EVERY JOB WITH TRUCO® JOB-MATCHED SAWS AND BLADES



COUNTER-BALANCED, SELF-PROPELLED CONCRETE SAW stays in cut and keeps cutting. Heavy duty 30 or 36 H.P. engine. 0'—36' per min. travel; takes 12", 14", 18" blades, cuts within 2" of curb or wall. Right or left hand cutting. Parking brake. Many other outstanding features of performance, easy handling, economy.



When front is raised, fifth wheel gives easy handling.

Send for new Truco catalog and price list.

ECONOMY SAW has rugged 18 H.P. gasoline engine or 7½ H.P. electric motor. Manually propelled.

TWO GREAT MASONRY SAWS—Truco Standard for high-speed, quality work at low cost. Takes 14" blades.

Truco Heavy-Duty, Super-Powered Saw—most powerful, most versatile saw; many features for easy, accurate use, economy, long life. 14" or 18" blade models.

TRUCO JOB-MATCHED ABRASIVE and DIAMOND BLADES for every make and model saw and every type of sawing in all materials. Unmatched for speed and economy and backed by the famous 50-year-old Truco name.



MASONRY DRILLING DIVISION WHEEL TRUEING TOOL COMPANY

2078-3200 W. Davison, Detroit 38, Mich.

575 Langlois, Windsor, Ont.

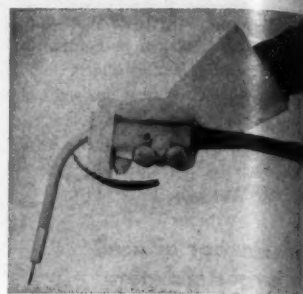
For more facts, use Request Card at page 18 and circle No. 339

Semiautomatic welder for variety of jobs

The Lincoln Electric Co. announces a new semiautomatic production welder for use on machinery and in structural fabrication. The inner-shield squirt welder continuously feeds a tubular, self-shielding electrode through a welding gun that is manually supported and guided along the joint being welded.

A dc motor generator supplies power for the welding range of 350 to 600 amp. Amperage control is achieved by varying wire-feed speed. Current and arc voltage controls are conveniently located on the tilted control panel of the welder.

A 50-pound coil of inner-shield electrode is mounted on the wire reel



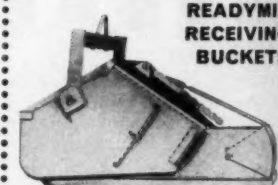
and force-fed by the variable-speed wire-feed motor through the hollow welding cable. This welding cable also carries the welding current to the wire contact nozzle located at the tip of the welding gun. In addition, a

INSLEY CONCRETE EQUIPMENT



ROUND-TYPE BUCKETS

Groat-tight gates—complete control at any stage of discharge—center dump prevents spillage, assures accurate placement—easy-to-reach lever lets operator watch pouring—½ to 2 cubic yard capacities—narrow or square gals.



READYMIX RECEIVING BUCKETS

Automatically balances itself when picked up—narrow radial gate for accurate placement—groat-tight gate—ideally suited for columns or exterior walls—½ to 3 cu. yd. capacities.

ROCKER DUMP HAND CARTS



Pneumatic tires and anti-friction bearings—rocker arms provide clean dumping and protection against rolling while dumping—smooth all-welded tray, heavily reinforced—slab axle frame welded integrally with tray.



FLOOR HOPPERS

Compact—fast, easy-operating gates—handles stiffer concrete—45° valley slope—steep sides with rounded corners—welded frame—30.7 to 61.2 cu. ft. capacities.

For dependability, for durability, count on Insley's many years of experience in manufacturing concrete equipment. See your Insley dealer or write direct to

INSLEY MANUFACTURING CORP.
P.O. Box 167 • Indianapolis 6, Indiana

For more facts, circle No. 341

CONTRACTORS AND ENGINEERS



5000 feet in 1 Hour

Attachable in 30 seconds

ZORN ASPHALT CUTTER*

Conventional techniques and apparatus for cutting pavements and roadbeds are now outmoded and obsolete, with the introduction of this automatic, rotary asphalt cutter. As illustrated, attached to a road grader, it can cut 5000 lineal feet of asphalt in one hour. One man equipped with a pneumatic paving breaker would require one day. The Zorn Asphalt Cutter is also adaptable for attachment to other construction equipment. It weighs 50 lbs., possesses great durability and strength and is guaranteed to perform as stated.

Price \$125.00

Write for full information and literature

MEREDITH PAVING CORPORATION

Union Landing Road, Riverton, N. J.

* U.S. Pat. #2,935,308

For more facts, use Request Card at page 18 and circle No. 340

small control cable runs from the welder along the outside of the welding cable to a trigger mounted in the gun handle. This trigger actuates wire feed and output-current magnetic contractors.

For further information write to The Lincoln Electric Co., Dept. C&E, Box 3115, Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 6.

Steel safety fuel tanks for heavy-duty trucks

New steel safety fuel tanks for use on its heavy-duty trucks have been announced by the Motor Truck Division of International Harvester Co.

Four models of single tanks for either gasoline or diesel fuel are now in production. They include a 47-gallon left or right center step, a 50-gallon left or right single, a 63-gallon left or right center step, and a 66-gallon left or right single.

For further information write to the Motor Truck Division, International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 63.

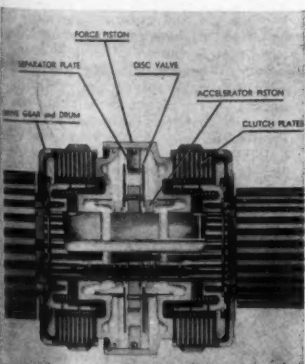
Offer new clutch line for construction rigs

Rockford Clutch Division of Borg-Warner has introduced its new line of Power Shift hydraulic clutches, available as original or replacement components for a wide range of transmissions and machinery.

The versatile clutches have been designed to drive off-highway wheel and track-type vehicles, cable and winch drives, prime movers, front-end loaders, and other equipment.

The new line is available in six sizes to handle torque loads from 1,000 to 10,000 pound-feet, engines up to 1,000 horsepower, and speeds up to 5,500 rpm. The dual-drive design is said to give end-to-end shifting with smooth, fast engagements.

For further information write to the Rockford Clutch Division, Borg-Warner Corp., Dept. C&E, 314 Catherine St., Rockford, Ill., or use the Request Card at page 18. Circle No. 25.



The new Rockford Power Shift clutch in a neutral position.

For more facts, use Request Card at page 18 and circle No. 342

Compact submersible pump has 20,000-gph capacity

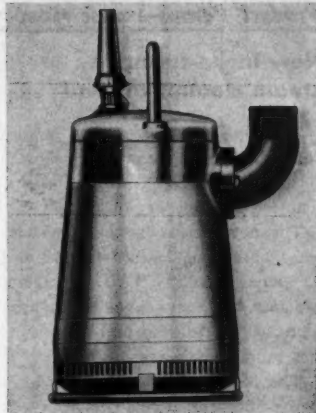
A new electric submersible pump is announced by Flygt Corp. Called the Bibo 3", it weighs only 88 pounds yet is capable of capacities exceeding 20,000 gph and heads to 105 feet.

The manufacturer calls attention to several major improvements in the new pump. Redesigned impellers achieve greater capacity, while lowering power consumption. Due to its light weight and compact construction, one man can easily carry or

place the unit. Fewer parts are involved, simplifying maintenance and service accessibility. Newly designed diffusers are less expensive and easier to adjust.

The Bibo 3" is available in 220/440 and 550-volt 3-phase and 220-volt single-phase models.

For further information write to the Flygt Corp., Dept. C&E, Hoosick Falls, N. Y., or use the Request Card at page 18. Circle No. 10.

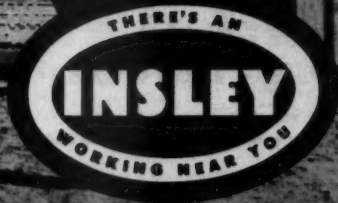


An INSLEY gives the best SERVICE

Take this Insley M for example. The modern wide-vision cab lets the operator see his work in all boom positions. Dependable, easy-working controls and clutches let the operator do more with less effort. A third drum provides an additional load line for snaking in pilings, etc. Conservatively rated parts stand up under the toughest conditions with greatly extended service life. These are just a few of the Insley "plus" features. Get the full story from your Insley dealer today.

... gets the best service, too!

The Insley service network includes over 100 dealer locations throughout the U. S. and Canada. Each dealer has trained servicemen and is well stocked with genuine Insley parts... ready to handle virtually any service problem on an around-the-clock basis. Consider the importance of service and parts when you buy a new machine, and you'll buy an Insley every time.



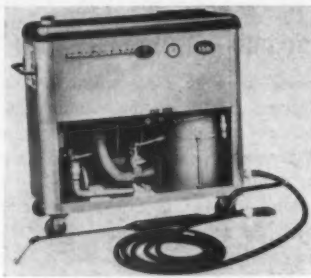
INSLEY MANUFACTURING CORPORATION
P. O. Box 167 • Indianapolis 6, Indiana

New large-capacity steam cleaner offered

The Malsbary 150, a new, larger-capacity steam cleaner to replace former 120-130-gph sizes, is announced by Malsbary Mfg. Co.

The new cleaner is the same size (45 inches long, 21 inches wide, and 43 inches high) as the Model 130 it replaces, but pump capacity has been increased to 135-150 gph by redesigning pump components.

The Model 150 retains Malsbary's new orifice and nozzle design, which produces a uniform cleaning pattern of large droplets, reported to increase cleaning efficiency 10 to 20 per cent. An oil-fired, caster-mounted model



or a gas-fired, stationary model is available.

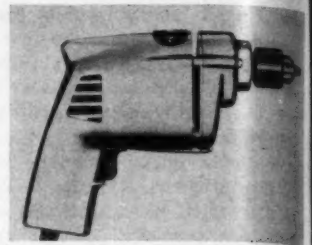
For further information write to the Malsbary Mfg. Co., Dept. C&E, 845 92nd Ave., Oakland 3, Calif., or use the Request Card at page 18. Circle No. 45.

Two new electric drills in 1/4, 3/8-inch sizes

Two new ball-bearing electric drills have been announced by Skil Corp. They are the 1/4-inch Model 70 and the 3/8-inch Model 76.

The Model 70 has a 2.5-amp motor, helical gears, and lightweight, die-cast aluminum housing. According to the company, this model will handle virtually all drilling jobs encountered by contractors, maintenance crews, and equipment repairmen.

The larger-capacity Model 76 features a 2.8-amp motor; light, die-cast aluminum housing; and an auxiliary side handle for extra control and better leverage when large bits, wood



The new Skil Model 70 electric drill is a 1/4-inch all-purpose unit.

augers, and hole saws are used. For further information write to the Skil Corp., Dept. C&E, 5033 Elston Ave., Chicago 30, Ill., or use the Request Card that is bound in at page 18. Circle No. 30.

Will your present rollers be earning \$\$\$ for you in 1965?

... this one will!



INGRAM 8-12 TON TANDEM

INGRAM 12 TON 3-WHEEL

FACT: Compaction roller owners get more years of service with Ingram rollers.

Reason: Every detail of an Ingram is made and assembled by specialists to provide contractors with a better performing roller needing less maintenance.

Thirty years of design and engineering experience goes into every Ingram roller by men who know compaction problems. From yoke pins to power units, all parts in an Ingram are selected for their ability to provide longer top performance.

Required compaction densities are reached faster, at less cost... with an Ingram. 3-wheel, tandem or self-propelled pneumatic rollers... in sizes for any job.

Call or visit your near-by Ingram distributor today. You'll see why an Ingram roller is your "best buy."

Write for free literature to: Acme Iron Works, P. O. Box 2020, San Antonio 6, Texas.

INGRAM ROLLERS



Ingram 10-ton 9-wheel pneumatic roller



Ingram 8-12 ton tandem roller

ACME IRON WORKS

P. O. BOX 2020 • SAN ANTONIO 6, TEXAS

For more facts, use Request Card at page 18 and circle No. 343

Spraybar height control for asphalt distributors

E. D. Etnyre & Co. has announced a new method for control of spraybar height on its Black-Topper bituminous distributors. The new mechanism, called Bar-Hite, is said to eliminate the problem of spraybar height changes that occur as the amount of material in the distributor tank is reduced.

Normally on asphalt sprayers, as bitumen is being pumped from the tank during spraying, the truck chassis frame rises as weight is reduced, and the spraybar rises along with it.

Etnyre's Bar-Hite control makes use of a linkage and cable mechanism attached between the truck chassis springs and the spraybar. According to the company, this maintains a constant height of the spraybar above the road, regardless of the amount of asphalt in the distributor tank.

For further information write to E. D. Etnyre & Co., Dept. C&E, 200 Jefferson St., Oregon, Ill., or use the Request Card at page 18. Circle No. 34.

Offer hardfacing wire in 500-pound coils

Victorpac, a new 500-pound container of continuous-coil hardfacing wire for automatic welders and track-rebuilding equipment, eliminates four coil changes and thus saves up to 2 hours of down time per container compared with standard 100-pound layer-wound coils, according to the manufacturer, the Alloy Rod and Metal Division of Victor Equipment Co.

Victorpac containers also protect wire against dirt, dust, and moisture and make for easier handling and storage, the company reports.

Automatic wires presently available in Victorpac containers are Victor VA4X, VA5X, and VA7X in 1/8 and 5/32-inch diameters, developed primarily for buildup of rollers, idlers, and other track parts on tractors and shovels.

For further information write to the Alloy Rod and Metal Division, Victor Equipment Co., Dept. C&E, 13806 E. Imperial Highway, Norwalk, Calif., or use the Request Card at page 18. Circle No. 32.

MOBILE OFFICE UNITS...



Save TIME... and MONEY!!!

MOBILE OFFICE Units are low in cost... Built to your specifications... There's a unit to fill your every need.

Because MOBILE OFFICE Units are easy to move from job to job, they enable you to have office, engineering, paymaster and other facilities at every point of your operation. These units are economical, time saving, rugged and durable. They are self-contained, and are available with air-conditioning, and can be fitted to your specifications.

MOBILE OFFICES are being used by major contractors and other major businesses throughout the United States. In every case they have proven their worth.

Remember, whatever your needs may be, a MOBILE OFFICE Unit can be built to fill your requirements.

If It's Mobile... We Build It!

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Mobile Office, Inc., 7300 Stony Island Ave., Chicago 49, Ill.
For more facts, use Request Card at page 18 and circle No. 344

WISCONSIN tilt trailers



MODEL 1500



great...just GREAT!

Great... because of its amazing 8° climb angle that permits safe, easy load or unload of heaviest equipment! Great too because the WISCONSIN low bed beavertail means fast, one-man loading with automatic raising and lowering of deck... no blocks or cribbing necessary... there's sure-footed traction even when deck is wet. And the WISCONSIN's famous built-in ruggedness adds years of extra use and profits for you. Get the full story... write us today

Model 1500 — 15-ton capacity \$2400 w/deck and tires, plus freight and tax. Stationary deck optional... lengths built to customer specs.

WISCONSIN TRAILER COMPANY, INC.
RICHFIELD, WISCONSIN Phone HUBertus 108

Wisconsin Tilt Trailers available from 4 to 30-ton capacity

For more facts, use Request Card at page 18 and circle No. 345

CONTRACTORS AND ENGINEERS

New push-dozer blades for tractor series

New cushion-action push dozers, incorporating a single lift cylinder for hydraulic controls, have been announced by Caterpillar Tractor Co. for the D8 Series H and the D9 Series E tractors.

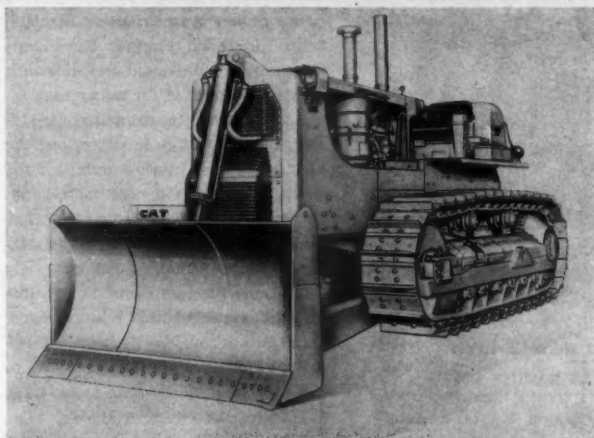
The new No. 8C and No. 9C dozer blades were developed to fill a gap between full-time bulldozing work and strictly push-loading applications. They permit push-tractor approach and contact with scrapers at relative speeds up to 3 mph, and are reported to be equally effective for smoothing the cut, haul-road repairs, and other normal dozing work.

Use of the single lift cylinder gives

operators greatly improved forward vision, the company reports. It is mounted by pinning at the top center of the radiator guard. Cable controls also are available for the cushion dozers on both tractors.

More complete cushioning has been accomplished by lengthening the travel distance before "bottoming" of the four rubber springs. Each spring is composed of eleven separate disks, which are made of a new and softer rubber compound.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 3.



Cycle-time reduction and increased spread performance are said to result from use of the new Caterpillar 8C cushion push bulldozer.

Offer break-resistant block-cutting blade

The Clipper Mfg. Co. announces a new addition to its series of Blue Bond break-resistant abrasive blades. The Model MR 824 is designed especially for cutting lightweight block and softer types of stone.

According to the manufacturer, the new blade is fiberglass-reinforced for extra strength. Long blade life is said to result from a special manufacturing process that protects the blade from side wear.

For further information write to the Clipper Mfg. Co., Dept. C&E, 2800 Warwick, Suite 142, Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 61.

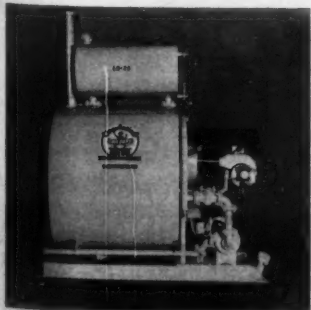
New hot-oil heater for hot-mix plants

Childers Mfg. Co. has announced a new low-cost, manually operated circulating hot-oil heater.

Called the Little Devil, this unit is equipped with button start and stop, electric ignition, high-limit shutoff, and temperature regulation by fuel input. The burner uses No. 1 or No. 2 light oil, or it is available with a gasoline motor to be utilized when electricity is not available. Fuel input is 2 to 6 gph, and horsepower required is 1 1/4.

The Little Devil is insulated with 2 inches of fiberglass covered with metal skin. Specifications include: length, 72 inches; height, 72 inches; and width, 40 inches. It has a 70-gallon circulating oil capacity.

For further information write to the Childers Mfg. Co., Inc., Dept. C&E, 2010 Sixth St., N.W., Albuquerque, N. Mex., or use the Request Card at page 18. Circle No. 7.



GREENVILLE RIPPER FOR IH TD-15, 20, 25 TURN TRACTOR INTO 4-WAY MACHINE

... rip ... bulldoze ... tow ... pushload without changing tools

RIP AT ANY DEPTH ... Pitch and depth control adjustments permit ripping at any depth. From basic settings, operator can adjust hydraulically as required. Settings can be made in seconds. Hydraulic system holds points at desired depth. Shank design and pitch control keep points at best ripping angle.

LIVE SWIVEL ACTION ... Shanks smoothly swivel 15° in either direction on heavy pins—seek out weak spots in rock. It gives points a live action that shatters rock with a jack-hammer action. Shanks follow tractor like a trailer.

FINGER-TIP HYDRAULIC CONTROL ... Finger-tip control of the "power-matched" hydraulic system exerts Goliath-like power which distributes the weight of the tractor on ripping points for fast, complete penetration.



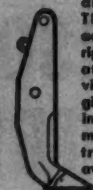
THE GREENVILLE TRAILING SWING BRACKETS work separately, each pivoting about a heavy pin to seek out weak spots in rock. The ripper weight balances dozer, resulting in greater traction and more usable horsepower.



BOOSTER RIPPING ... A push block, straddling the center shank and swing beam can be attached very quickly by pinned connections. This permits use of the combined efforts of two tractors for added ripping power.



CURVED SHANKS are available in 24" maximum digging depth for TD-20 and 25. These shanks give their best performance in materials that are not blocky or slabby in formation.



STRAIGHT SHANKS are available in 24", 42" and 48" maximum digging lengths for TD-25 and all will adapt to the standard ripper without special attachments. Greenville's straight shanks give top performance in a wide range of materials. 18" penetration shanks are available for TD-15.



REPLACEABLE POINTS ... For use with curved and straight shanks.

Tractor	Max. Ripping Depth W/Std. Shanks	Ground Clearance		Overall Width Tool Beam	Tool Beam Cross Sect.	Pump Data (Rear PTO)	Cyl. Dimensions		Pist. Rod Diam.
		24" Shank	18" Shank				Bore	Stroke	
TD-25	24"	31"	—	108"	11" x 12 1/2"	60 gpm @ 1000 psi	8"	15 1/2"	3"
TD-20	24"	24"	—	102"	10" x 12"	44 gpm @ 1000 psi	6"	15"	2 1/4"
TD-15	18"	—	12"	90"	8" x 8"	37 gpm @ 1000 psi	5"	15"	2"

STEEL
GREENVILLE
CAR CO.

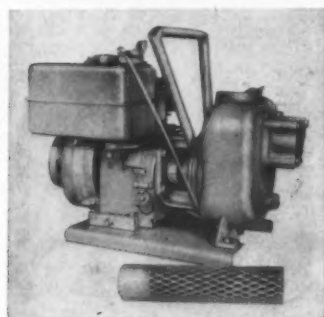
EARTHMOVING

EQUIPMENT

GREENVILLE
STEEL CAR COMPANY

Greenville, Pennsylvania

For more facts, use Request Card at page 18 and circle No. 346



Introduce new 2-inch centrifugal pump set

A new pumping set, the Aqua-master, has been introduced by Universal Motor Co. A 2-inch centrifugal

pump driven by a Briggs & Stratton 3-hp air-cooled engine, the Aqua-master is a lightweight portable unit said to be suitable for many uses.

According to the company, the design of the pump incorporates the best features of existing pumps along with improvements for simplicity. It is simple to operate and to take down or assemble, making adjustments and repairs comparatively easy. Long life and economy are important features, the manufacturer claims.

For further information write to the Universal Motor Co., Dept. C&E, 641 Universal Drive, Oshkosh, Wis., or use the Request Card at page 18. Circle No. 13.



Spoiling
for profit
anywhere,
everywhere...

PARSONS® 77 TRENCHLINER®

Turning a profit on miles of small-sized trench is easy digging for the Parsons 77. It has all the features you expect to find only on much larger machines, yet is not much wider than a yardstick. It has everything you need to tangle with toughest terrain and to bring home ditch fast and clean.

The Parsons 77 cuts from 6" to 18" wide, digs to 5' depths at speeds to 21 lineal feet per minute. It gives you a choice of 32 hi-lo digging selections for most profitable penetration in any ground. And it is low on maintenance... gives you years of dependable service and miles of ditch at very low cost. Ask your distributor for details.

**PARSONS
COMPANY**
Newton, Iowa

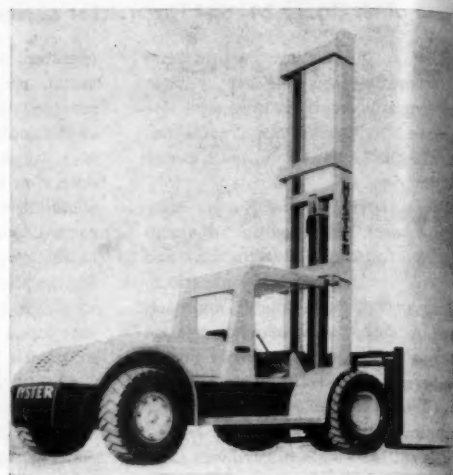
KOEHRING
A Division of
Company

P100-CE

Please send me the Parsons 77 booklet.

Name _____
Company _____
Address _____
City _____ State _____

For more facts, use coupon or Request Card at page 18 and circle No. 347



The Hyster Co.'s new Challenger 460A lift truck is built to handle loads in the 46,000-pound-capacity range.

Heavy-duty lift truck has 23-ton capacity

The Challenger 460A, a 23-ton-capacity fork-lift, is the newest addition to Hyster Co.'s pneumatic-tire lift-truck line.

Rated at 46,000 pounds at a 48-inch load center, the unit is especially suited for handling steel, pipe, concrete, and other heavy materials.

According to the manufacturer, two features designed to keep the unit operating with minimum trouble are an exclusive full-time, full-flow oil filter and a dry-type air cleaner with

precleaner. A 3-speed, power-shifted planetary transmission with integral torque converter is said to provide fast, smooth handling.

Choice of a Continental 6-cylinder gasoline engine rated at 153 horsepower at 2,400 rpm or a Continental diesel engine rated at 140 horsepower at 2,400 rpm is offered.

For further information write to the Hyster Co., Dept. C&E, P. O. Box 847, Danville, Ill., or use the Request Card at page 18. Circle No. 38.

Stabilizer attachment speeds grader work

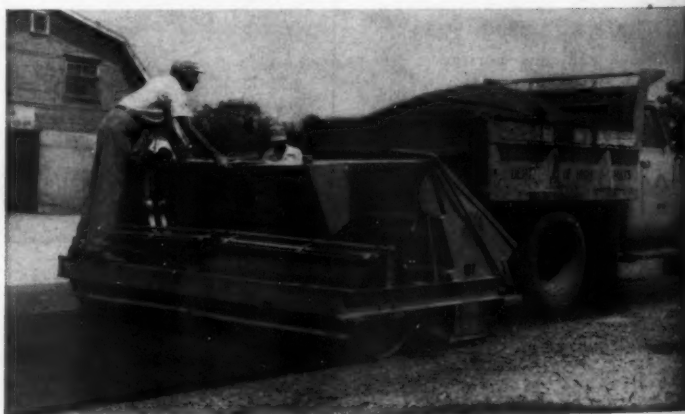
The A. W. Schnuerle Mfg. Co. offers a motor-grader stabilizer said to permit safe, accurate grading work at speeds never before possible.

The company claims this new stabilizer eliminates jump, gallop, and sway in all motor graders with tandem drives, thus permitting grader speeds to be safely increased from 50 to 100 per cent on all types of grading work such as road maintenance, base

grading, surface finishing, and lay-down handling of dirt, gravel, and rock.

Other important benefits claimed for the stabilizer include the saving of considerable wear and tear on tires and tandem-drive mechanisms.

For further information write to the A. W. Schnuerle Mfg. Co., Dept. C&E, Box 101, Aberdeen, S. Dak., or use the Request Card at page 18. Circle No. 71.



OVERMAN STONE AND ASPHALT SPREADER A BIG-JOB PAVER AT A SMALL COST

You can do fast, high-quality paving with this small, compact, low cost machine. Lays any type, commercial asphalt. Easily handled on small jobs, highly efficient on the largest job. A proven money-maker for contractors and highway departments everywhere.

GET THE FACTS... WRITE FOR DESCRIPTIVE BULLETIN TODAY

I.J. OVERMAN MANUFACTURING CO.
BOX 896 MARION, INDIANA

For more facts, use Request Card at page 18 and circle No. 348

CONTRACTORS AND ENGINEERS



This new equipment trailer, offered by the Evans-Plugge Co., features low platform height for easy loading.

Announce new series of equipment trailers

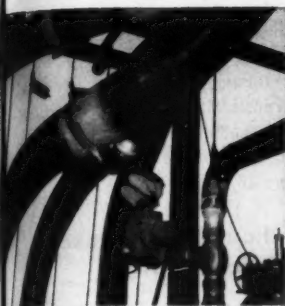
A new series of equipment trailers has been announced by the Evans-Plugge Co. This T Series, engineered and designed for the construction industry, features extra-low platform height and low tilt angle for easy loading and unloading.

The T Series trailers have the added

feature that the trailer tandems can easily be inverted. This gives a deck height that will clear the four 15-inch tires. This feature allows extra-wide loads to be carried on the same trailer.

Optional features include running lights, directional lights, 12½ × 5½ electric brakes, tongue stand, and hydraulic tilt control.

For further information write to the Evans-Plugge Co., Dept. C&E, Columbus, Nebr., or use the Request Card that is bound in at page 18 of this issue. Circle No. 126.



For your low hydrogen welding— Airco electrodes meet every critical need

Here are the Airco low hydrogen electrodes—from a total of more than 100 Airco electrode types in more than 100 sizes and designs—

AIRCO 312 AWS-ASTM E60-7016. For welding higher strength alloy or carbon steels. Also high sulfur content steels. Designed to overcome "underbead cracking." Lessens need for high preheat or stress-relieving postheat.

AIRCO 395 AWS-ASTM E8016-C1. For welding the 2½% to 3½% nickel steels used in low temperature jobs. Also for nickel bearing steels, to provide uniform chemistry at joints with minimum difficulty. No high preheat needed.

AIRCO 395 AWS-ASTM E8016-C3, A 1% nickel type of low hydrogen electrode. Also for nickel bearing steels where good low temperature properties can be attained; high sulfur content steels; grade 11 and similar high tensiles.

AIRCO 394 AWS-ASTM E10016-D2. For welding manganese-molybdenum high strength steels such as A-302 Grade B.

AIRCO 354 AWS-ASTM E8016-B2. For welding 1% chrome 5% molybdenum steels used for pressure vessels in high temperature service; and for castings of similar analysis.

NEW—"Barrier Carton" bars moisture damage. Special aluminum foil interlining in new carton now protects dryness of Airco low hydrogen electrodes 8 times better than regular style carton. If your application can't tolerate moisture damage...specify Airco.



AIR REDUCTION SALES COMPANY

Division of Air Reduction Company, Incorporated
150 East 42nd Street • New York 17, N. Y.



AIR REDUCTION SALES COMPANY

A division of Air Reduction Company, Incorporated
150 East 42nd Street, New York 17, N. Y.

More than 700 Authorized Airco Distributors Coast to Coast

For more facts, use Request Card at page 18 and circle No. 349



Project: 325,000 kw power plant for Arkansas Power & Light Company. **Prime Contractor:** Ebasco Services Inc. **Sub-Contractor:** Grafe-Weeks Corporation. **Electrodes:** Airco.

AIRCO LOW HYDROGEN ELECTRODES USED ON HIGH TENSILE PIPE WELDING

at giant new power station

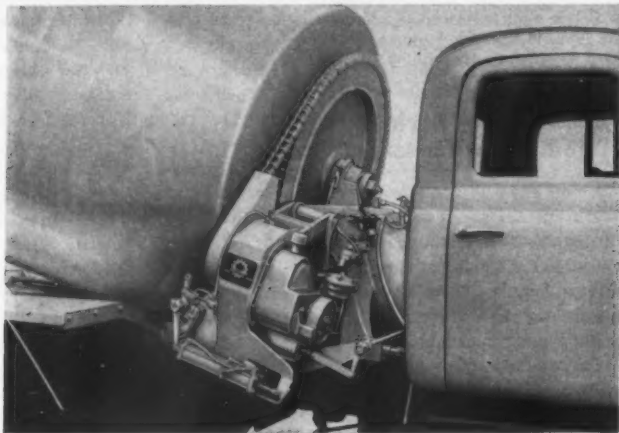
AIRCO LOW HYDROGEN ELECTRODES were used by Grafe-Weeks Corporation to weld the hundreds of feet of high pressure piping in the giant new steam turbine power plant of the Arkansas Power and Light Company at Helena on the Mississippi.

Why? . . . Because Airco low hydrogen electrodes provide an easily directed arc specifically designed to meet requirements of high pressure pipe welding . . . They also deliver

X-ray quality deposits under tough conditions.

Ask for a shop demonstration. Would you like to see Airco electrodes put to the test? Let your Airco salesman or distributor arrange a demonstration at your convenience . . . using Airco low hydrogen electrodes or any other group of Airco electrodes. Call Airco, or look in your Classified Telephone Directory under "Welding Equipment and Supplies" for your nearest Authorized Airco Distributor.

On the west coast—
Air Reduction Pacific Company
Internationally—
Airco Company International
In Canada—
Air Reduction Canada Limited
All divisions or subsidiaries
of Air Reduction Company, Inc.



Hercules Galion offers this new transit mixer, operated by flywheel-drive transmission. Available sizes are 5, 6, and 7 cubic yards.

Flywheel drive powers new transit mixer

The Transmatic concrete mixer, completely new and designed to operate smoothly on any truck with flywheel-drive transmission, is offered by the Transit Mixer Division of Hercules Galion Products, Inc. According to the manufacturer, this mixer can be driven equally well by flywheel-drive power takeoff, separate engine, or front-of-truck engine.

Push-button controls are located in the truck cab and at either end of the mixer to provide ease of operation. To insure maximum power

for operating over rough terrain, the Transmatic offers cab-controlled, push-button-activated drum drive cutout; this makes available full engine torque for traction when needed. As an added safety check, an auxiliary manual control is provided for mixing and discharging of concrete.

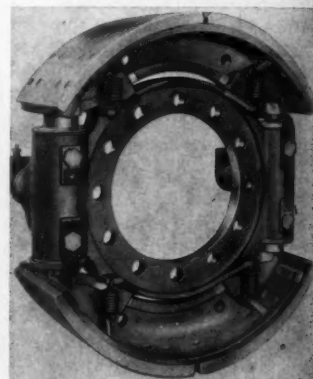
Climbing a ladder to fill the water tank has been eliminated by a low-level air-pressure tank that can be quickly filled from ground level. The positioning of this air tank also lowers the center of truck gravity for more efficient operation.

Standard capacities available are 5, 6, and 7 cubic yards.

For further information write to the Transit Mixer Division, Hercules Galion Products, Inc., Dept. C&E, Gallon, Ohio, or use the Request Card at page 18. Circle No. 5.

New heavy-duty brake for variety of rigs

Rockwell-Standard has introduced a new heavy-duty Stopmaster brake. Operating on a balanced-design actuation principle, the brake provides equal braking effort by both brake shoes for improved performance, cooler operation, and uniform lining wear, according to the company.



Hydraulically actuated, the Stopmaster is available in 17, 20 1/4, 22, and 26-inch diameters, and in 4 to 10-inch widths, for a wide variety of earthmoving and construction machinery.

The need for periodic lubrication is eliminated, since all actuation parts are located internally and sealed in lubricant, the company reports.

For further information write to the Rockwell-Standard Corp., Brake Division, Dept. C&E, Ashtabula, Ohio, or use the Request Card at page 18. Circle No. 29.

New portable core drill for highway, lab work

The Acker Drill Co. announces production of a new, portable core drill. Known as the Ambassador, the new drill features a heavy-duty, high-torque, 2-speed reversible electric motor.

Using thin-wall diamond bits, the

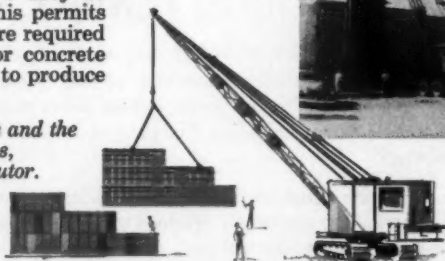
AIRBORNE UNI-FORM PANELS

*smart way
to speed concrete
forming...*



Forming speed and economy can be greatly increased by crane handling big monoliths of UNI-FORM Panels. Contractors with repetitive section forming requirements are finding that the design of UNI-FORM Panel monoliths—in which metal filler angles are used between each panel—give them greater versatility and wider application. For example . . . tie rods of any size from 1/2" to 1" may be used to tie two monoliths into a wall form. This permits using the right tie size for the job. Fewer ties are required and sections can be placed, tied and ready for concrete faster. Panels may be added or removed at will to produce any monolith required.

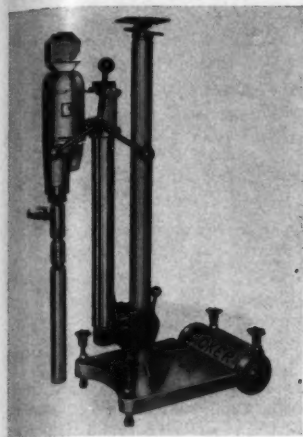
For complete information on UNI-FORM Panels and the UNI-FORM System in crane handling operations, write today, or ask your nearby Universal Distributor.



UNIVERSAL FORM CLAMP CO. 1238 N. KOSTNER AVENUE • CHICAGO 51, ILLINOIS

BRANCH OFFICES and WAREHOUSES:
ATLANTA BALTIMORE CLEVELAND HOUSTON
LOS ANGELES SAN LEANDRO TORONTO

For more facts, use Request Card at page 18 and circle No. 350



The new Gurries Automatic Road Builder maintains a preset blade height and cross slope in relation to a selected reference.

Announce new model of grader-spreader

Gurries Mfg. Co. announces the new Model GARB-44 Automatic Road Builder, a versatile high-production machine for all grading and spreading operations in highway work.

A special feature of the new rig, according to the manufacturer, is its ability to automatically maintain blade height and cross slope in relation to a selected reference. Through an automatic hydraulic system, the



height of the blade can be controlled for wire follow, left side-wheel follow, right side-wheel follow, and planing.

While blade-height control is maintained, the cross slope is automatically held to the desired setting by the pendulum control. Cross slope can be set for 0 up to 25 per cent fall, left or right.

The new machine is said to be ideal for grading and for spreading sub-grade, rock base, untreated base material, shoulders, etc.

For further information write to the Gurries Mfg. Co., Dept. C&E, 1720 S. First Ave., San Jose, Calif., or use the Request Card at page 18. Circle No. 4.

new drill cores neat, clean holes through concrete, reinforced masonry, and other materials, the manufacturer reports. Because of its portability it is said to be particularly useful to highway and municipal departments for coring holes for parking meters and signs, as well as for test laboratory work.

For further information write to the Acker Drill Co., Inc., Dept. C&E, P. O. Box 830, Scranton 2, Pa., or use the Request Card at page 18. Circle No. 35.

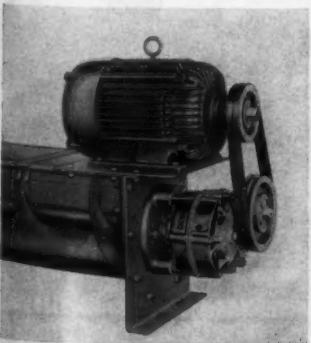
Screw-conveyor drive for material transfer

A compact screw-conveyor drive especially designed for short conveyor flights and low horsepower requirements is announced by Dodge Mfg. Corp. The new Series 100 drive is offered in two speed ratios: 8:1 for up to 6 horsepower at 225 rpm, and 18:1 for up to 3.8 horsepower at 100 rpm.

The new unit consists of a double-reduction speed reducer with packing gland and driving shaft that mounts on a trough end. Trough ends are also available. Maximum efficiency is said to be assured through the use of heat-treated helical steel gears and pinions.

Heavy-duty tapered roller bearings in the reducer take thrust from the screw in either direction. The driving shaft is mounted in a steel sleeve, and a built-in puller facilitates changing the shaft without opening the reducer. The entire drive is easily mounted on or removed from the trough end by means of three bolts in the reduced flange.

For further information write to the Dodge Mfg. Corp., Dept. C&E, Mishawaka, Ind., or use the Request Card at page 18. Circle No. 14.



The Lorain Moto-Matic transmission is simple, easy to get at.

Lorain Moto-Loader Model ML-309 equipped with a 3-yd. bucket loads out rock at the quarry face of the Lincoln Stone Company, Joliet, Illinois.

ML-309 Moto-Loader with **MOTO-MATIC*** does more for you.

**The new transmission with strait-thru, 4-speed, full power shifting*

At that critical moment when you are coming out of the pile or bank with a load, and want a higher speed for long-haul carry—that is when you will appreciate Lorain's Moto-Matic transmission.

A flick of the hand power shifts into all speeds—even from second to third—without stopping. You truly have a time-saving, 4-speed transmission, not 2 sets of 2 speeds as on other makes. You don't have to make a speed range decision and then stick with it even though it may be too low for maximum travel speed or too high for digging effort. Quick as a wink you can use all 4 speeds to put more material into the trucks.

Other "Moto-Matic" advantages.

1. Transmission ratios and planetary axle drive ratios are coordinated for real, balanced performance—

whether for digging tractive effort or high speed travel.

2. Change direction and speed with one foot . . . no hands required as one foot alternates between two pedals to select forward or reverse and speed. Both hands freed for other controls.
3. Easy to service because there are fewer parts than other designs—easier to get at, with standard tools.

This new idea in power-shift transmission is a major reason for the outstanding performance of the Lorain ML-309 Moto-Loader. But it is just one reason. There are many more. Your nearby Moto-Loader distributor will be glad to give you all the facts.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

LORAIN[®]

DOES MORE
FASTER • FOR LESS

PLANTS in Lorain and Elyria, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ¼- to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 11,000-lb. to 18,000-lb. lifting capacity.

OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.



This completely hydraulic crane, made in the Netherlands, is available in five sizes that can hoist and move loads of 2 to 15 tons.

Netherlands firm offers new hydraulic cranes

A line of building and material-handling cranes, operated hydraulically with a reported maximum of safety, is now in production in the Netherlands and will soon be ready for export to the American market.

Five sizes of the low-structure crane have been announced by the manufacturer, BPG, Mobiele Kranen-fabriek N.V. They are said to be powerful enough to hoist, slew, tip, and move loads of 2, 4, 7, 10 and 15 tons, respectively.

Without auxiliary support of any type, these cranes can handle their respective maximum loads with a safe stability of more than 60 per cent when their beams are in the most disbalanced positions, according to the manufacturer. This stability ratio prevails when steel girders are suspended and moved by their ends, or when the beams are pointing straight up.

All five models of the hydraulic crane are driven by diesel engines capable of delivering between 17 and 58 horsepower, depending on lifting capacity. One set of controls located in the cab of the truck governs the entire operation of the hydraulic system.

For further information write to the Netherlands Trade Commission, Dept. C&E, 10 Rockefeller Plaza, New York 20, N. Y., or use the Request Card that is bound in at page 18. Circle No. 12.

COMMENT from the BUTLER ENGINEER

... Of a Giant Expansion to Meet Cement Demand

One of the great cement companies—with a confident eye to the immediate future—has just entered upon a nation-wide, multi-million dollar program in expansion and the establishment of new supply centers. It's big. And it means a whale of a lot to you—Mr. Ready Mix, Mr. Concrete Products and to you—Mr. Roadbuilder. First, because the program is based upon a careful study of immediate demand for cement. Second, because you will profit enormously from this activity. Companies of this magnitude don't bet millions if the future looks uncertain.

And we're glowing because those storage bins are made by Butler. Each line of 4 bins holds 8289 cu. yds.—and there are 9½ lines. And all are equipped with Butler Gates and Airflow-matic Feeders.

Incidentally, just to show you versatility in metals which Butler fabricates, we recently completed 5 aluminum bins, each of 392 yards capacity, for a large chemical company. It was a solution to a contamination problem. So what metal do you want? Let us know.

The Concrete Masonry Exhibits in the handsome and newly completed Cobo Hall, Detroit, was a lively and inspiring success... but there were many who figured it would be a colossal flop. Trouble stemmed from a jurisdictional misunderstanding by the unions. Really not intentional; it was born of inexperience in routines attendant upon a big machinery show. Situation beautifully and diplomatically handled by Mayor Miriani, and by a rational attitude by the unions—once they understood.

Recession? Man! We're busy.

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

For more facts, circle No. 352

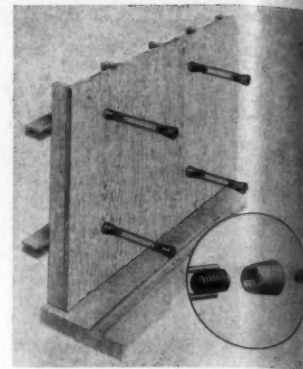
Plastic coil cone for tie assemblies

The Superior Cone-Fast coil tie assembly now features a newly developed bond-free plastic coil cone that will not adhere to concrete, according to the manufacturer.

This development is said to permit instant cone removal when stripping concrete forms.

The cones (1¼-inch outside diameter) are smaller than the conventional metal cones and have less taper to provide positive grout anchorage. Their distinctive red color makes for easy identification.

For further information write to Superior Concrete Accessories, Inc.,



Dept. C&E, 9301 King St., Franklin Park, Ill., or use the Request Card at page 18. Circle No. 42.

WESTERN OFFERS A COMPLETE LINE OF ROLLERS VIBRATORY — STATIC — PNEUMATIC



ONE-TON ASPHALT ROLLER. The ECONOROLL is ideal for "close-up" rolling... patching... driveways... parking areas. Complete water system, cone mats, dual scrapers. A quality roller at LOW, LOW PRICE.



VIBRATORY ROLLER FOR GRAVEL. Compaction of granular material for concrete floors is an excellent application for WESTERN'S VIBRATORY roller. Six inch layers are easily compacted. Helps eliminate floor settling.



VIBRATORY ROLLER FOR ASPHALT. Model 2T-VH excellent for rolling binder courses. Husky 12.5 h.p. engine... use roller with or without VIBRATION. Ideal for patching, weighs two tons, yet produces compaction equal to ten ton tandem.



VIBRATORY ROLLER FOR BASE MATERIAL. Model 2T-VT produced 107% specified compaction on six-inch layer of stabilized base. Ideal for GRAVEL, SAND, CRUSHED STONE, SOIL, CEMENT. Controlled vibrations... 1100-1500 v.p.m. ... compaction equal to twelve ton roller.

- A WESTERN ROLLER FOR ALL TYPES OF COMPACTION
- ROADS, STREETS
- PARKING AREAS, DRIVEWAYS
- STREET MAINTENANCE, PATCHING
- AIR BASES, MISSILE SITES
- EARTH DAMS, RECLAMATION JOBS
- INDUSTRIAL PROJECTS

WRITE FOR MORE INFORMATION — LET US ARRANGE A DEMONSTRATION

WESTERN EQUIPMENT DIVISION

Dept. CE-461 DOUGLAS MOTORS CORP.

1234 NO. 62ND ST.

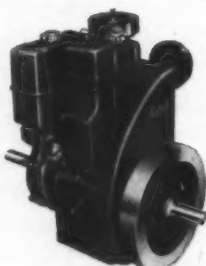
MILWAUKEE 13, WIS.

For more facts, use Request Card at page 18 and circle No. 354

AIR-COOLED DIESEL POWER

—by *Lister*

A complete range of
AIR-COOLED DIESEL ENGINES
from 3-1/2 HP to 72 HP.

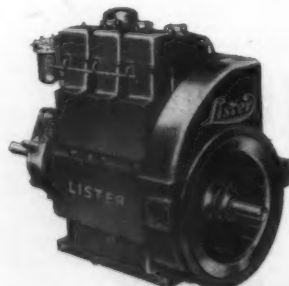


Model SL1.
4½ HP @ 1800 RPM

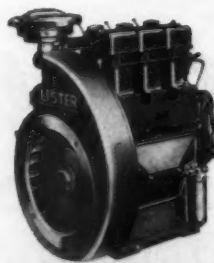
- Engineered to suit all types of applications.
- Totally enclosed working parts to insure continuous operation even under adverse conditions.
- Housings and adaptors to S.A.E. specifications.
- Design simplicity reduces maintenance costs.
- Rugged construction for heavy duties.

- Economical operation with low fuel consumption.
- Dependable power for generating sets, pumps, compressors, etc., in oil fields, construction, marine, agriculture, mining, refrigeration, etc.
- Approved by A.B.S., Lloyds and Norwegian Veritas.

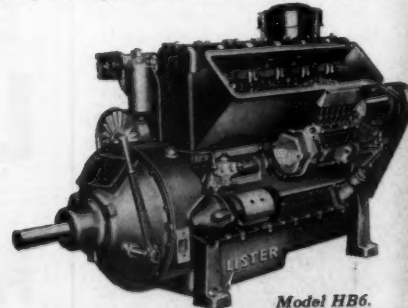
LISTER-BLACKSTONE, Inc., 42-32 21st Street, Long Island City 1, N. Y.
In Canada: Canadian Lister-Blackstone, Ltd., 1921 Eglinton Ave. East, Toronto 13, Ont.



Model SL3.
12½ HP @ 1800 RPM



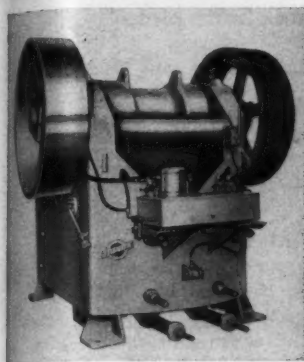
Model HB3.
36 HP @ 2000 RPM



Model HB6.
72 HP @ 2000 RPM

For more facts, use Request Card at page 18 and circle No. 353

CONTRACTORS AND ENGINEERS



Smith Engineering Works' new oiling system for its Telsmith jaw crushers consists of a tank-mounted pump and motor, mounted right on the crusher.

Crusher oiling system said to cut maintenance

Smith Engineering Works has announced a new oiling system for its line of Telsmith jaw crushers.

According to the manufacturer, this system eliminates the risk of crusher bearings running dry if undergreased, or of overheating when overgreased. Bearing life is said to be substantially increased, while down time and maintenance are greatly reduced.

The compact oiling unit is mounted on the crusher and operated by its own tank-mounted pump and motor. Fresh oil is pumped through the filter into the crusher bearings and returned to the reservoir tank through flexible hoses. Under severest abrasive conditions, Telsmith crushers now reportedly require oil changes only once in 1,000 hours or 4 months of full-capacity operation.

For further information write to the Smith Engineering Works, Dept. C&E, P. O. Box 723, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 70.

Offer power steering for tractor models

New heavy-duty power steering is available for Oliver 550 and Super 55 wheel tractors, according to an announcement by Oliver Corp.

The new power steering, available in field conversion kits and on new Oliver tractors, requires only 3 to 5 pounds' pull to turn the steering wheel, yet is designed to protect against overcontrolling, for maximum operating safety. Hydraulic power is applied directly to steering knuckle arms, eliminating high linkage and steering-gear loads, the manufacturer reports.

The new feature is said to help increase loading production of Oliver loaders, simplifying their operation and increasing the loading-cycle speed through added maneuverability.

For further information write to the Oliver Corp., Dept. C&E, 400 W. Madison St., Chicago 6, Ill., or use the Request Card at page 18. Circle No. 22.

Announce safety vest for work in traffic

The Warren-Knight Co. announces its Safety Flash vest No. 418-C for use by surveyors, markers, and others working where traffic presents a hazard.

The Safety Flash vest is made of a vinyl-coated, heavy cotton base in a vivid fluorescent orange-red with contrasting wide luminescent white stripes. Designed to fit over any type of clothing, it is perforated for coolness and comfort. It is secured by heavy cloth tapes through elastic cloth loops to provide freedom of movement.

The vest is reported to be plainly visible at considerable distances either



This Warren-Knight Safety Flash vest offers day or night visibility.

day or night.

For further information write to the Warren-Knight Co., Dept. C&E, 136 N. 12th St., Philadelphia 7, Pa., or use the Request Card at page 18. Circle No. 36.

Low-band mobile radio is fully transistorized

A new 20-watt low-band mobile radio set has been announced by Aeronautical Electronics, Inc. It includes the versatility of a 3-way power supply.

The Model 7N20/TVR features single-unit construction with all operating controls conveniently located on the front panel, and provides for both local and remote control. The aluminum cabinet can be easily mounted on a car's dashboard.

A fully transistorized power supply is incorporated into the design of the set and operates on either negative or positive ground battery systems. Because of this power supply the 7N20/TVR operates from 6 volts dc, 12 volts dc, and 115 volts ac; can be used as either a mobile or a fixed station; and may be transferred from



one service to the other without any electrical or mechanical changes.

For further information write to Aeronautical Electronics, Inc., Dept. C&E, P. O. Box 6527, Raleigh, N. C., or use the Request Card at page 18. Circle No. 60.

TIME IS MONEY!



Sterling

RE-BAR TIE WIRE

**will help you
SAVE BOTH**

Sterling Re-Bar Tie Wire for the handy reel dispenser worn at the belt, saves tying time... eliminates waste... steps up efficiency. Safer, too! With Sterling Re-Bar Tie Wire there are no loose ends to endanger workmen's eyes or catch on protruding objects. Kinks and tangles are eliminated. And, Sterling Wire is tougher, stronger and more workable to provide firm, snug ties. Save time—save money with Sterling... the better wire for better ties.

See Your Distributor



**FITS ALL
STANDARD
REEL
DISPENSERS**

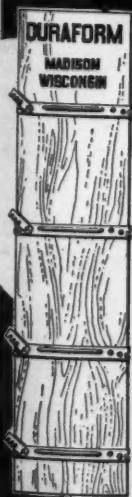
Sterling Re-Bar Tie Wire is available 20 coils to the box. No. 14 or No. 16 wire.

**NORTHWESTERN
STEEL AND WIRE
COMPANY**

SINCE 1879
STERLING, ILLINOIS

For more facts, circle No. 358

DURAFORM



**NOW... a speed form
COMPLETELY
REVERSIBLE
FOR MORE PROFITS**

- ★ All panels are reversible for outside or inside walls.
- ★ No loose hardware to handle or lose.
- ★ One man can set a Duraform panel.
- ★ Plastic impregnated.
- ★ Duraforms combine framing and bracing in one unit.

For larger profits next season write today for complete information.

DURAFORM, INC.

Dept. E, 2903 W. Beltline Hwy., Madison, Wis.

For more facts, circle No. 355



ROAD SHOULDER SPREADER

Model 605 Power-Pack truck-drawn spreader places up to 6 ft. of material in one smooth, clean, uniform pass... quick cable hook-up for any size truck or trailer... capacity up to 4 yds. per minute depending on material... moved easily from job to job without trailer equipment.

See your dealer or write for details now!

POWER-PACK CONVEYOR CO.

836 E. 140th St. - GLENVIEW 1-7670 - CLEVELAND 10, OHIO

For more facts, circle No. 356



An over-all view of the new Erie Strayer mobile central-mix concrete plant. Note the unique mixer drum about to discharge.

Offer completely mobile central-mix batch plant

A new, fully mobile central-mix concrete plant that is mounted on its own running gear and can be towed to job locations by truck tractors has been introduced by the Erie Strayer Co.

The new plant consists of three basic units—the aggregate-batching, cement-batching, and mixer units. Rated at a maximum capacity of 215 cubic yards of mixed concrete per hour, the plant reportedly can be dismantled at one work location, moved to another, and put back into operation within two 8-hour days.

The heart of the new plant is the

mobile mixer with its elevated discharge design, permitting low-to-the-ground operation. On a special low-boy trailer are mounted the mixer with 75-hp drive motor and starter, the control panel for the entire plant, a water meter, 500-gallon water tank and pump, air compressor, hydraulic power unit for tilting the mixer, and the power entrance panel.

The aggregate-batching unit consists of two unitized sections—a 100-cubic-yard bin hopper and a batching section complete with integral 48-inch belt conveyor. The bin is divided into three compartments equipped with hinged extensions. The cement-batching unit consists of a cement-batching bin with a 425-barrel maximum capacity and a 600-barrel-capacity ground storage silo.

All units of the Erie mobile central-mix plant have a maximum road height of 13 feet 6 inches. The maximum road width for each unit is 11 feet to meet the usual state-highway travel-permit regulations.

For further information write to the Erie Strayer Co., Dept. C&E, Box 1031, Erie, Pa., or use the Request Card at page 18. Circle No. 65.

Two-way pocket radio with range to 10 miles

A new 2-way pocket radio, the Herald Handle-Talkie, is announced by the International Communications Corp.

Precision-engineered and built with nine transistors plus one diode and one thermistor, the radio is reported to have an unobstructed range of up to 10 miles. The metal case is 2 1/4 x 1 x 6 inches, with telescopic whip antenna extending to 52 inches.

The entire unit weighs 15 ounces, less batteries.


For further information write to the International Communications Corp., Dept. C&E, 1929 Wilshire Blvd., Santa Monica, Calif., or use the Request Card at page 18. Circle No. 53.



The new Herald 2-way pocket radio.

CONTRACTORS AND ENGINEERS

This Tamper  is too much fuss

Just like this tired old Bus 

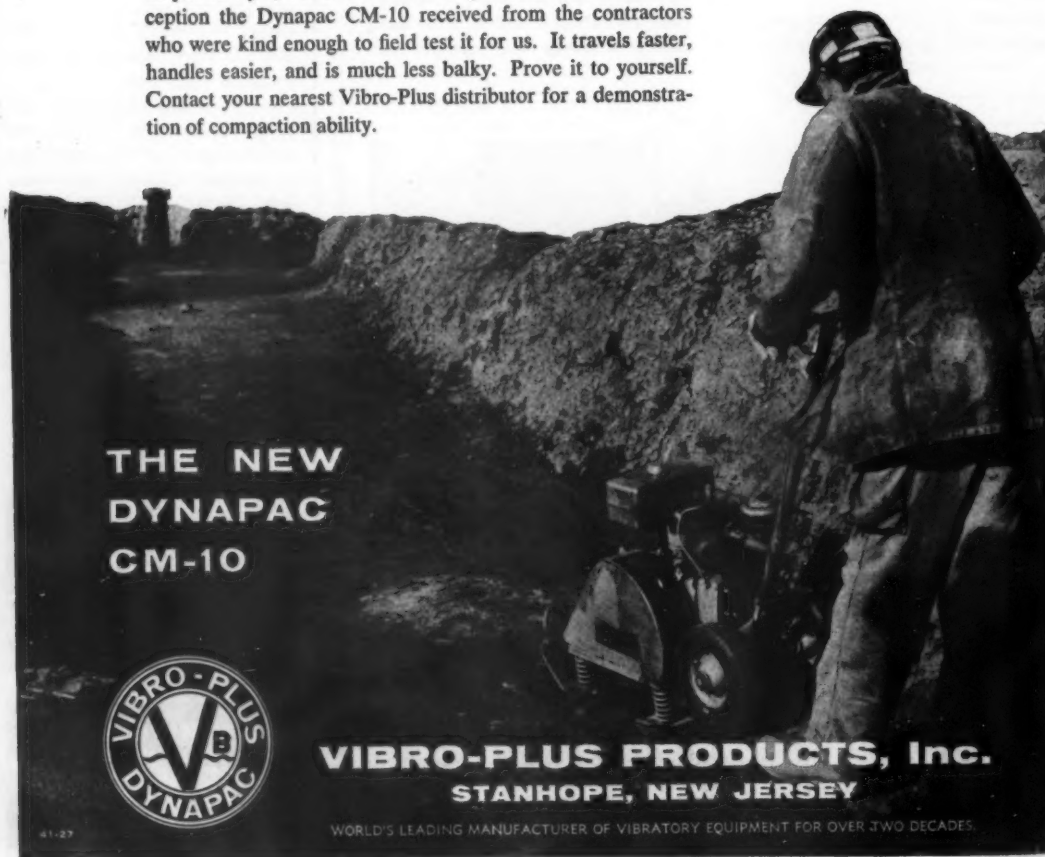
It was good enough for father 

But this one is less bother . . . 

NEW CM-10

For satisfaction contact Vibro-Plus.

It may be a little corny to sing the praises of a new machine in poetic style, but it is difficult to get across the terrific reception the Dynapac CM-10 received from the contractors who were kind enough to field test it for us. It travels faster, handles easier, and is much less balky. Prove it to yourself. Contact your nearest Vibro-Plus distributor for a demonstration of compaction ability.



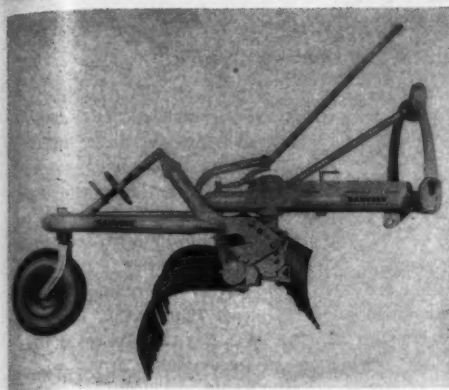
THE NEW
DYNAPAC
CM-10



VIBRO-PLUS PRODUCTS, Inc.
STANHOPE, NEW JERSEY

WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES.

For more facts, use Request Card at page 18 and circle No. 359



The new Danuser depth-gage wheel and rake can be used with the company's all-purpose blade for a variety of blading and spreading jobs.

Depth-gage attachments for multipurpose blade

The Danuser Machine Co. announces the addition of a depth-gage wheel and rake to its line of attachments for the Danuser all-purpose blade. The gage wheel can be used with blade only, or in combination with the rake and blade.

These two attachments make the Danuser 6 or 8-foot blade an efficient general-purpose tool for landscaping, roadside work, and other applications.

Various uses for the new gage wheel and rake, according to the company, are the spreading of gravel or top soil, and grading, leveling, and mulching. The rake can be set at an angle when it is to be used for windrowing rock and debris.

For further information write to the Danuser Machine Co., Dept. C&E, 500 E. Third St., Fulton, Mo., or use the Request Card at page 18. Circle No. 48.

Announce new line of welding helmets

The Lincoln Electric Co. announces a new series of protective head shields for welding operations. Protection, comfort, convenience, and durability are claimed for the Coolshield welding helmet.

Four styles of the fiberglass and polyester resin molded headpiece provide a range of shapes to accommodate the varying needs of welders and working conditions. The pliable thermoplastic helmet is said to adjust easily to exact head size and to form itself to exact head shape of the wearer.

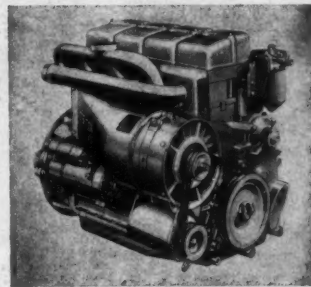
For further information write to The Lincoln Electric Co., Dept. C&E, P. O. Box 3115, Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 55.



Introduce compact new air-cooled diesel engine

Lister-Blackstone, Inc., announces an addition to its SL Series of air-cooled diesel engines. The Model SL4 develops 20 horsepower continuous at a maximum of 2,150 rpm.

According to the manufacturer, this new unit is a compact, lightweight diesel engine with an over-all length of 29½ inches and a height of 28 inches. All working parts are interchangeable with the SL1/3 units. Twelve-volt electric starting is included as standard equipment, and cooling is effected by an axial-flow fan belt driven from the crankshaft. For further information write to



Lister-Blackstone, Inc., Dept. C&E, 42-32 21st St., Long Island City 1, N. Y., or use the Request Card at page 18. Circle No. 20.



Building Longer Life into a Busy Bridge with LACLEDE REINFORCING STEELS

There are busy days ahead for this well constructed bridge. As part of a major Louisiana highway system, it will carry streams of automobile and truck traffic over the West Atchafalaya Floodway at Krotz Springs. Blount Bros., Inc., are building it for the Louisiana Department of Highways.

This bridge will give many years of useful service because, like so many other Federal and State highway projects, it's strengthened with Laclede Reinforcing Steels.

Laclede offers a complete selection of steel products for every highway reinforcement need: welded wire fabric, multi-rib bars, welded dowel spacers, prestressing strand, center and recess joints. All are made in Laclede's own mills, from quality open-hearth steel, by the most modern processes and equipment.

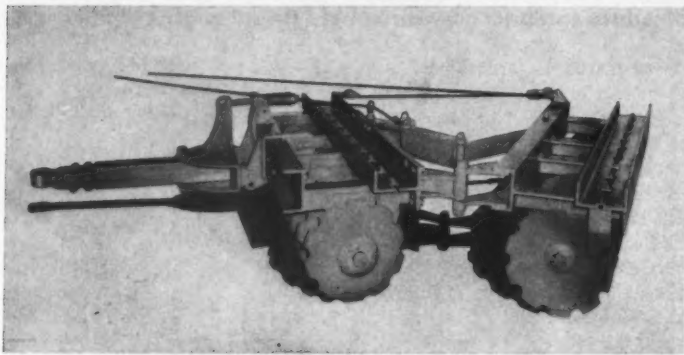


LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI

Producers of Steel for Industry and Construction

For more facts, use Request Card at page 18 and circle No. 360



The new Ferguson plowing disk is designed for heavy-duty work on earth fills for dams, highways, and airports.

New crawler drill with swinging boom

A new crawler-mounted rock drill with remote controls and other labor-saving devices has been introduced by Joy Mfg. Co.

The Model TDM-B1 is of flexible swinging-boom design, which permits hydraulic positioning of the feed and drill to put down holes in a lateral arc 45 degrees from center. This means the drill can be positioned over the side of the crawlers for line drilling in confined areas, the manufacturer reports.

New features include full-range power positioning, which permits changing from vertical to horizontal drilling without manual adjustment of the feed. Drilling controls are mounted on an arm that swings with the boom yet may be adjusted to vary the distance between the drill and the operator.

Another new feature is an automatic hose reel. Mounted on the feed and geared into the feed mechanism, the reel is said to keep the hoses that lead to the drill aligned and out of the way.

The TDM-B1 carries the Joy 450-DR dual-rotation drill as standard equipment. Chassis for the rig is reported to be of extra-rugged construction with a total of 23 horsepower for tramping.

For further information write to the Joy Mfg. Co., Dept. C&E, Henry W. Oliver Bldg., Pittsburgh 22, Pa., or use the Request Card at page 18. Circle No. 122.



The Joy Model TDM-B1 drill.

Offer plowing disk for heavy earth-fill work

The new Ferguson plowing disk, manufactured by Shovel Supply Co., Inc., is designed for such heavy work as cutting, plowing, aerating, and mixing soil on earth fills for dams, airports, and highways.

The extra-heavy frame, oversize Timken bearings, triple grease seals, and high-carbon notched disks of the unit are said to make it suitable for the toughest jobs.

The new tool is manufactured with

disks 28, 30, and 32 inches in diameter, and weight ranges from 10,500 to 12,500 pounds. A hinged type can be opened and closed from the tractor operator's seat. The rigid offset type can be equipped with rubber-tire transportation wheels.

For further information write to the Shovel Supply Co., Inc., Dept. C&E, P. O. Box 1369, Dallas 21, Texas, or use the Request Card at page 18. Circle No. 16.



New Barber-Greene A

Latest addition to Barber-Greene Finisher line is a new step forward in advanced design and superior performance.

Barber-Greene's Model SA-40 is a new achievement in ease of operation and automatic features, combined with simple construction for greatest accessibility and ease of maintenance.

Its wide range of paving speeds to 100 FPM. and travel speeds to 4 M.P.H., together with its many other features assure the greatest tonnage production every hour—day and year of its long life.

Some of its outstanding features are shown below. Whether you are in the market now or not,

you should be familiar with all of the advantages of this completely new modern design. Your Barber-Greene distributor will gladly give you full information. No obligation.

Only Barber-Greene Offers You Five Choices COMPACT: Model 873, paves on crawlers, travels on rubber.

GENERAL DUTY: Model 879-B and new Model SA-40.

HEAVY-DUTY: Model SA-60 on Crawlers and Model SB-60 on Pneumatics.

NEW EASE OF OPERATION.

Joystick, power-assist steering. Switches on joystick control self-dumping hopper, screed hoist, etc.

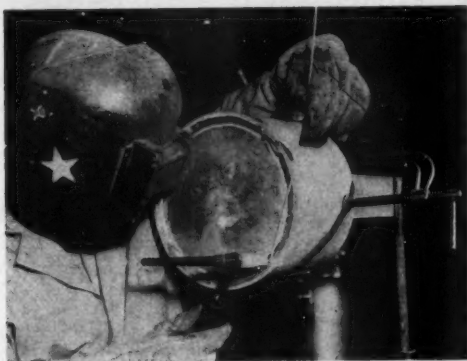
HYDRAULICALLY SELF-DUMPING HOPPER.

Tunnel extends to rear of chassis for maximum capacity and fastest truck dumping. Hopper gates controlled from screed platform while paving.

HEAVY-DUTY LONGER LIFE AUTOMATIC

SCREED. Hydraulically operated, hydraulically speed tamper compacts before screed. Improved automatic leveling. Tapering screed heaters.





The Airco H16-A Heliweld holder is an air-cooled unit with 160-amp ac or dc continuous capacity.

Offer air-cooled holder with 160-amp capacity

A new high-amperage air-cooled, tungsten-inert-gas holder is offered by Air Reduction Sales Co. The Airco H16-A Heliweld holder is reported to be the only air-cooled unit on the market with 160-amp ac or dc continuous capacity.

According to the company, the H16-A provides rapid, clean, and

smooth welding of thin-gage aluminum, alloy and stainless steels, brass, copper, magnesium, and other metals. The 2½-inch head clearance permits its use in confined spaces. Air-cooled construction eliminates the need for a water system.

A variety of nozzle orifice sizes is available in 1¼ and 1½-inch lengths. Features of the new holder include minimum stub loss, efficient gas shielding, and elimination of high-frequency leakage. Tungsten electrodes from .020 through 5/32-inch diameter and from 2 to 7 inches in length can be accommodated. Argon, helium, or mixtures of argon and helium shielding gases can be used.

For further information write to the Air Reduction Sales Co., a division of Air Reduction Co., Inc., Dept. C&E, 150 E. 42nd St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 28.

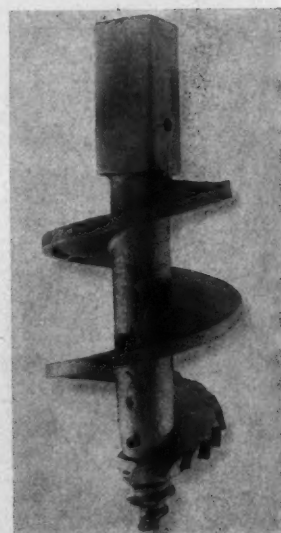
Introduce new auger for post-hole digging

A new auger has been introduced by Trainer Associates, Inc., for use in erecting highway guardrail posts and signs, as well as for tough digging in other applications.

Called Poster Bore, the new auger is available in 8, 10, and 12-inch diameters.

Designed of high-strength cast steel, the Poster Bore has functional lines said to eliminate multiple parts. Heavy-duty steel jagged teeth promote "biting" on the first turn and reportedly eliminate wheel spinning. This auger is quickly and easily assembled with the aid of a pin that locks the top of the penetrator and tooth assembly into rigid position.

For further information write to Trainer Associates, Inc., Dept. C&E, New Castle, Del., or use the Request Card at page 18. Circle No. 43.



For more facts, use Request Card at page 18 and circle No. 362

neA-40 Finisher

stages
Your
n full
ices
avels
odel
and



Model SA-40 paves standard 10' widths—variable from 8-14'. Handles all asphalt mixes. Carries shift-long fuel supply in 28-gal. tank.

World's No. 1 Manufacturer of Asphalt Paving Equipment

Representatives in Principal Cities of the World

Barber-Greene

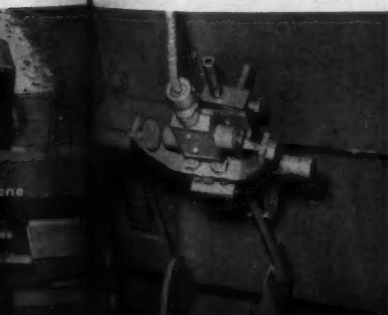
Main Office and Plant: AURORA, ILLINOIS, U. S. A.
Other Plants: DeKalb, Milwaukee, Detroit, Canada, England, Brazil, Australia

CONVEYORS • LOADERS • DITCHERS
ASPHALT PAVING EQUIPMENT

OSCILLATING PUSH ROLLERS pick up trucks on-the-fly regardless of alignment. New long crawlers provide the ultimate in traction, leveling, and stability.

SIMPLIFIED SERVICING achieved through unitized construction and simple, efficient power train. Hinged deck plates for easy perimeter access.

ANGER LIFT AUTOMATIC FEEDER CONTROL operated, high speed each pair of feeders and screws before striking independently. Override switches on leveling. Turning column.





1925 Mack AB Model still handles its share of the workload.

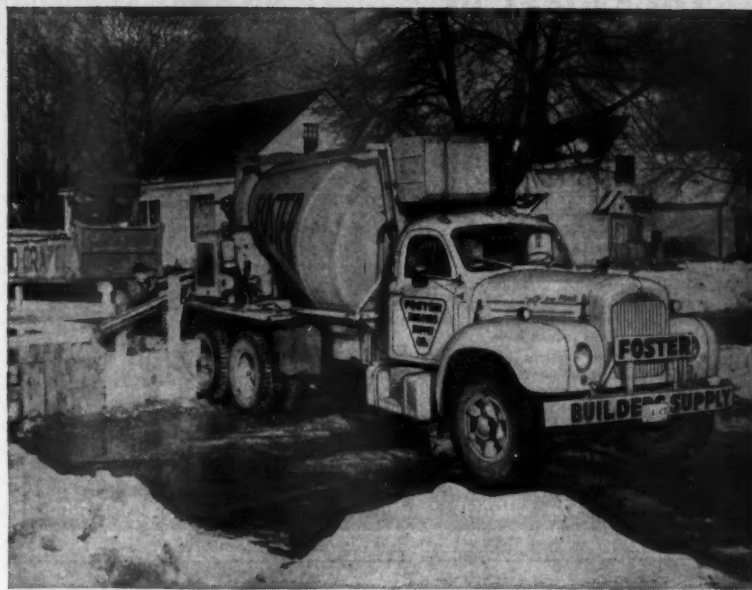
You can't kill 'em...



Three-axle dump trailer hauled by Mack B Model delivers a load of pit sand on construction site at Smiths Creek, Mich. Mile-long run from sand pit to job is made in fastest legal time, thanks to Mack truck maneuverability.



Lumber load is transferred directly from rail car to trailer powered by B Model Mack for delivery to building supply yard of Foster Builders Supply, Port Huron, Mich.



Storm sewer construction site finds six-wheel Mack discharging its load of ready-mix concrete. Foster operates eight such Macks in its mixer fleet.

because they're built by Mack

You've heard the expression often . . . Macks are the one truck you can't kill. While Macks don't live forever, they do live far longer, earn far more on construction jobs.

Foster Builders Supply Company of Port Huron, Mich., and its subsidiary The Brownie Corporation are good examples. "We've used Macks since the early '20s, as well as other makes, and we're sold on the performance, dependability and economy of Macks," says President H. C. "Brownie" Foster.

"Whether they're hauling loads of

lumber at 32,000 lbs. GCW . . . 121,000-lb. GCW's in aggregate trains . . . or six-yard loads of ready-mix concrete . . . our Mack trucks have been outstanding performers. Even our 1925 Mack AB Model still handles its share of the workload."

Foster Builders Supply has learned over the years what more and more construction operators are finding out; that Balanced Design, Mack's practice of building far more of its vital components than any other heavy-duty truck maker, pays off in a matchless vehicle.

Construction or building supply, for

whatever job you have in mind, there's a heavy-duty Mack made to master it. Contact your Mack branch or distributor for full details. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario. 8177

MACK
FIRST NAME FOR
TRUCKS



The Brownie Corporation, owned by H. C. "Brownie" Foster, H. C. Foster, Jr., and Louis H. Foster, operates popular B Model Macks as aggregate hauling trains with a GCW of 121,000 lbs. and as dumpers shown below.



THE LATEST IN DIAPHRAGM PUMPS!

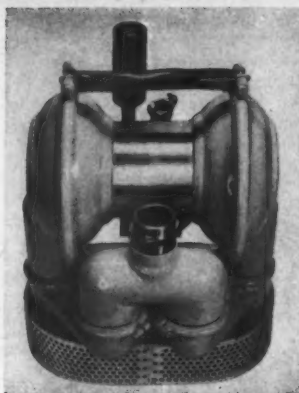
Another new LAYTON PNEUMATIC PUMP

- Powered by compressed air for more effective, more efficient pumping of liquids containing high percentage of solids or just plain water. Requires just 20 c.f.m. of air at 100 p.s.i. Discharges 6300 g.p.h. at 10 ft. discharge head — 2160 g.p.h. at 100 ft.

- Layton pumps are one-man portable . . . self-priming . . . quiet in operation . . . safe . . . fireproof . . . odorless. Submerge in liquid or use suction hose.

- The handiest pumps for dewatering trenches, caissons, shafts, foundation holes, tunnel headings, sumps, sludge.

• Distributors in ALL Principal Cities — Write for Catalog or Further Details



• Model DA-4; Weight 79 lbs., Height 21", Length 16 1/4", Width 16 1/4".

LAYTON CO., INC.

P.O. BOX 87A, CUDAHY, WISC.

Phone. HUMBOLDT 1-4400

For more facts, use Request Card at page 18 and circle No. 364

PUZZLED?

it's all in
knowing how

GALVANIZED

PROBLEMS:

of eliminating
material waste, time delays, removal expense
and hazardous operations on
concrete bridge decks

ANSWERED

BY:

USF

"leave-in-place"

STEEL FORMS

Send for details to:

United Steel Fabricators, Inc., Wooster, Ohio



Highway Guard Rail
Bridge Flooring
Steel Forms for
Concrete Bridge Decks
Corrugated Metal Pipe
Window Walls
Metal Doors & Frames
Metal Buildings

For more facts, use Request Card at page 18 and circle No. 365

Product Parade—THESE PRODUCTS CAN HELP WIDEN YOUR PROFIT MARGIN



This S & R aluminum scaffold rides the bottom flange of exterior bridge beams, providing an adjustable work platform for form work and concrete finishing.

New rolling scaffold for bridge form work

A new lightweight aluminum scaffold that rolls on the bottom flange of exterior bridge beams is announced by S & R Construction Specialties. It is designed to provide a lightweight, portable, adjustable rolling platform for erecting and stripping forms from overhang on bridge decks, and for concrete finishers.

The scaffold can be disassembled quickly by two men and loaded in a pickup truck for moving to a new location, according to the manufacturer. It is said to permit quicker stripping of forms because it allows concrete finishers to work from the scaffold after deck forms are stripped. It also offers safer working conditions and a more comfortable working height, the company reports.

The new unit is constructed of high-tensile-strength aluminum, except for working parts subject to hard wear. It adjusts easily for various flange widths up to 23 inches. The work platform is 16 feet long and 4 feet wide. The unit is in two sections to facilitate jumping around pier caps without workmen having to leave the scaffold.

For further information write to S & R Construction Specialties, Dept. C&E, 360 Pattie Drive, Berea, Ohio, or use the Request Card at page 18. Circle No. 58.

Greater safety, comfort in new tractor cabs

Maximum operator protection is said to be provided in a super-heavy-duty cab designed by Crenlo, Inc., for hazardous operations with the Caterpillar 630 four-wheel tractor.

Protective features of Crenlo's Model SC630A cab include a 3/16-inch steel canopy and structural-steel members that are welded to the cab and braced to the tractor frame. Heavy steel guards at the top and rear and a steel grill over the back window further shield the operator.

The cab is also designed for more comfort and convenience with such features as large interiors, ready access to controls, roll-down windows, window vents, and insulated ceilings. Large windshields are tinted to prevent glare.

For further information write to Crenlo, Inc., Dept. C&E, 1600 Fourth Ave. N.W., Rochester, Minn., or use the card at page 18. Circle No. 44.

Gives a Man Giant Strength



CM PULLER

- **SMALL**
Lever is only 20 1/2" long.

- **POWERFUL**
83 lbs. on lever produces 3,000 lbs. at hooks. *1 1/2 ton model.

- **VERSATILE**
"CM-Alloy" flexible welded chain. Lifts or pulls at any angle.

- **PORTABLE**
Made of aluminum alloy. 1/2 ton model weighs only 14 lbs. Capacities 3/4 to 6 tons.



A NATURAL FOR CONSTRUCTION WORK!
The "CM" Puller will do a "thousand-and-one" jobs for you. It will do them faster, safer and for easier. The "puller" is compact . . . stores conveniently in a tool box. Lifetime lubricated. Every contractor should have one.



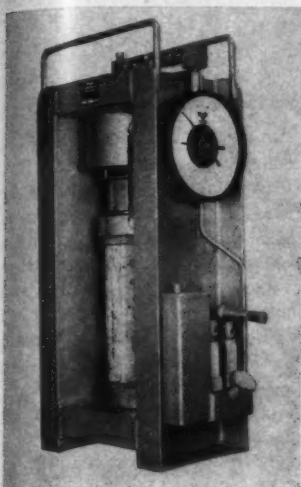
SEND FOR "CM" PULLER BULLETIN 146 AND NAME OF YOUR LOCAL DISTRIBUTOR.

CHISHOLM-MOORE HOIST DIVISION
COLUMBUS McKINNON CORPORATION

TONAWANDA, NEW YORK
NEW YORK • CHICAGO • CLEVELAND
In Canada: Columbus McKinnon Limited, St. Catharines, Ontario

For more facts, circle No. 366

CONTRACTORS AND ENGINEERS



Announce new portable concrete-testing unit

An addition to the line of Forney concrete-testing machines is the Model FT-10 Jobsiter, a portable unit for testing cylinders, blocks, bricks, cubes, and beams.

Of rugged all-welded construction, the new tester features a 250,000-pound load rating.

The 8-inch-diameter gage is located in one of the vertical channels and cushioned with sponge rubber. The dial has an opening that exposes critical adjusting points so that recalibration is simplified. A unique feature, according to the company, is the location of the operator at the side instead of the front so that he is protected from flying fragments. Fragment guards are not required.

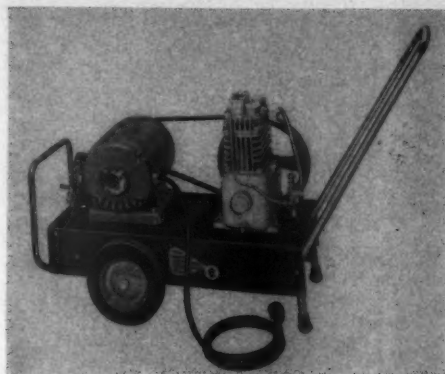
For further information write to Forney's, Inc., Tester Division, Dept. C&E, P. O. Box 310, New Castle, Pa., or use the Request Card at page 18. Circle No. 33.

New mobile compressor for maintenance shops

A new 2-cylinder mobile air compressor, designed to provide a high-volume, heavy-duty source of air power plus convenient portability, has been announced by the Campbell-Hausfeld Co.

The QR Series compressor is said to be especially suited for use in contractors' maintenance shops for spray painting, air cleaning, etc.

Available with either a 1-hp electric motor or a 3-hp gas engine, the new compressor provides air delivery of 5.4 cfm at 45 psi or 4.0 cfm at 100 psi. It is designed for a working pressure of 100 pounds continuous operation



The Campbell-Hausfeld QR compressor is especially recommended for use in maintenance shops.

or 150 pounds intermittent.

For further information write to the Campbell-Hausfeld Co., Dept.

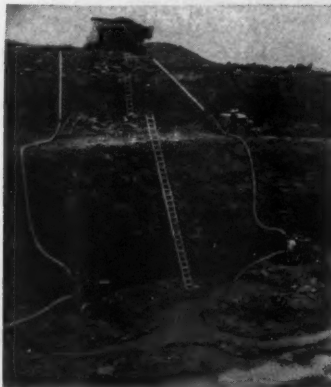
C&E, 801 Moore St., Harrison, Ohio, or use the Request Card at page 18. Circle No. 51.

The HEART of any solution to seepage water IS THE PUMP ON THE JOB!



Marlow's WORK NIGHT AND DAY

Keep monster trench workably dry!



These engine-driven Marlow self-priming pumps operate on a 24-hour schedule to control seepage water.

The giant Niagara Power Project called for the construction of a \$141,000,000, four-mile-long conduit waterways system. Trenches were dug in four separate sections to accommodate huge 46 foot by 66 foot concrete conduits. They will carry water from the upper Niagara north to the Tuscarora Pumping and Generating Plant.

When seepage water became a serious problem on one section, Merritt-Chapman & Scott Corporation installed big Marlow self-priming pumps to keep the area

workable. On another section of the project, Gull Contracting Company and L. G. Defelice and Sons, Inc. used Marlow self-primers in the trenches. Operated to carry water over a 75-foot embankment, these pumps handled 90,000 GPH on continuous service.

In addition to a complete line of AGC rated pumps, Marlow also builds the famous "Mud-Hog" diaphragm pump. For full information, write today for Bulletin C-09 and the name of your Marlow dealer.



MARLOW PUMPS

DIVISION OF BELL & GOSSETT COMPANY

MIDLAND PARK, NEW JERSEY

Morton Grove, Illinois • Longview, Texas

For more facts, use Request Card at page 18 and circle No. 368

FOUNDATION CONSTRUCTION

CAISSONS

DRILLED AND UNDERREAMED

PIERS

SPECIAL DRILLING PROBLEMS

Offices in Atlanta, Ga.,
Pittsburgh, Pa.,
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Wire or phone for a quotation
on your next foundation job —
ANYWHERE IN THE WORLD

McKINNEY

DRILLING COMPANY

NACOGDOCHES, TEXAS

Ph: LOgan 4-8373 • P. O. Box 190

For more facts, circle No. 367

MAY, 1961



The new A-C Model 145-T grader is a medium-weight rig of 105 horsepower. It is fifth in the A-C line of graders.

Introduce medium-weight 105-hp motor grader

The Model 145-T, a medium-weight motor grader with 105 horsepower, has been introduced by Allis-Chalmers Mfg. Co.

The power plant of the new rig is the new turbocharged 7000 Series engine, said to offer all the advantages of the A-C controlled-turbulence, open-chamber series of engines. It is reported to feature high fuel economy, easy starting and quick response for ability to hang onto the load, clean exhaust, cool running, and long life.

Weight of the 145-T is 21,640 pounds.

The Model 145-T, fifth in the A-C grader line, is said to have been designed for performance and specification needs in all geographical areas, at all altitudes, and under all working conditions.

For further information write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 120.

Self-priming pump in two new models

Hale Fire Pump Co. has announced the addition of two new units to its Torrent line of self-priming portable pumps.

Both units, trailer-mounted on pneumatic tires for easy towing, can



The Hale Model 40-T Torrent, one of two new self-priming portable pumps.

be moved to location fast for quick dewatering jobs. Their heavy-duty air-cooled industrial engines are said to have ample reserve power for long hours of continuous pumping with minimum down time.

The Model 40-T pumps 40,000 gph, and the Model 41-T pumps 30,000 gph. Both units automatically reprime fast, even on high lifts, the manufacturer reports.

For further information write to the Hale Fire Pump Co., Dept. C&E, 708-716 Spring Mill Ave., Conshohocken, Pa., or use the Request Card that is bound in at page 18 of this issue. Circle No. 64.

Lightweight, portable slurry and texture gun

The Air Placement Equipment Co. has announced the Spray-Text, a lightweight, portable slurry and texture gun designed for spraying texture paint, acoustical plaster, waterproofing, sand finish coats, etc.

The Spray-Text delivers over 4,000 square feet of material in a working day, according to the manufacturer. Weighing only 125 pounds, the new unit has adjustable feed control on the hopper, quick-change orifices for texture control, and a built-in com-

WORKING COMBINATION FOR YOUR AIR AND WATER LINES



With NAYLOR Spiralweld pipe and Wedgelock couplings on the job, you have a combination that works to save you time, trouble and money.

You save time in handling NAYLOR pipe. It's easier and faster to install because its lockseamed-spiralwelded structure creates a light-weight pipe without sacrifice of strength and safety.

You'll like the way Wedgelock couplings save time and work, too. They simplify and speed connections since joints can be made up with only one side of the pipe in the open and a hammer is

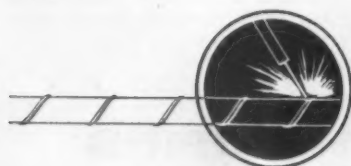


NAYLOR Wedgelock couplings make a positive connection securely anchored in standard weight grooved ends.

the only tool required to connect or disconnect them.

Look into this NAYLOR pipe and coupling combination for air, water, and ventilating service.

Write for Bulletin No. 59



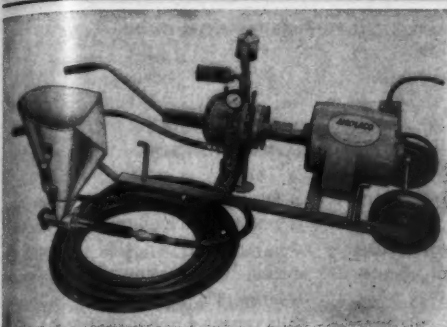
NAYLOR PIPE Company

1270 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

For more facts, use Request Card at page 18 and circle No. 369

Product Parade—THESE PRODUCTS CAN HELP WIDEN YOUR PROFIT MARGIN



Airplaco's new Spray-Tex slurry and texture gun is a lightweight, portable rig, yet it can cover more than 4,000 square feet in a working day.

pressor driven by a 1-hp 60-cycle 110-volt electric motor.

For further information write to the Air Placement Equipment Co., Dept. C&E, 1000 W. 25th St., Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 66.

Horizontal earth drill eliminates trenching

A new lightweight horizontal earth drill that can be set up and operated by one man has been announced by the Construction Machinery Co.

According to the company, the new drill greatly reduces the cost of laying pipe since it practically eliminates trenching and filling. Holes from 2 to 12 inches in diameter and up to 200 feet long can be drilled under streets, highways, and other areas without open-cut trenching and filling. A 2-inch hole reportedly can be drilled 5 feet in approximately 30 seconds in ordinary soil.

The new CMC drill uses 5-foot sections of 1-inch pipe for drill stems and a 2-inch auger to make the pilot hole. Return reamers, available in five sizes from 4 to 12 inches, are then used to enlarge the pilot hole to the desired size. The drill bit and stem are kept free in the hole by use of water pressure to flow the loosened earth back along the outside of the drill stem to the hole entrance.

Power is furnished by a Briggs & Stratton 5.75-hp 4-cycle gasoline engine.

For further information write to the Construction Machinery Co., Dept. C&E, 447 Vinton St., Waterloo, Iowa, or use the Request Card at page 18. Circle No. 41.



The new CMC earth drill reportedly can bore a 5-foot hole 2 inches in diameter in approximately 30 seconds. Holes up to 12 inches can be drilled.

Winslow

TRUCK SCALES
PIT AND PITLESS TYPES

Capacities: 15, 18, 20, 30, 40, 50, 60 and 70 tons.

For use at temporary and permanent locations, stockpiles, and by bituminous material contractors at the jobsite.



TYPE CS — PITLESS — PORTABLE

Write or phone
Dept. B-70 today
Phone NOrth 1231

WINSLOW GOVERNMENT STANDARD SCALE WORKS, INC.
25TH & HAYTHORNE
TERRE HAUTE, IND.

For more facts, use Request Card at page 18 and circle No. 371



**30,000 FEET OF
BETHANIZED BRIDGE STRAND
SUPPORTS 4-ACRE ROOF
AT IDLEWILD**



Architects and Engineers: Tippetts-Abbett-McCarthy-Stratton; Associate Architects: Ives, Turano and Gardner; General Contractor: Turner Construction Co.; Steel fabricator: Lehigh Structural Steel Co.; Steel erector: Lehigh Construction Co.

The new jet terminal for Pan American World Airways at New York's Idlewild Airport is topped by a 4-acre elliptical canopy roof. The long overhang of this cantilevered roof provides shelter to jet planes as they load and unload around the periphery of the building.

The canopy roof is framed with 32 tapered steel beams. These rest on columns near the midpoint, then soar free for an additional 114 ft. Each radial beam is supported by

six 170-ft lengths of Bethlehem 2½-in.-diam bridge strand, made up into assemblies with anchor sockets at either end. The outer wires of the 1 x 147 strand have the bethanized "B" coating of electrolytically applied zinc, for extra protection against corrosion.

The six strands have a total strength per beam of 2,256 tons. The modulus of elasticity is 24,000,000 psi. With the strand tensioned, it exerts an uplift and prestress to the

steel beams. The eccentric force exerted reduces bending stresses effected by the long cantilever.

Bethlehem Strand provides maximum strength per unit of weight and diameter. The bethanized coating is supplied in various coating weights, to meet varying requirements for corrosion-resistance. For full details, call the nearest Bethlehem sales office.



for strength
... economy
... versatility

There's a distributor of Bethlehem Rope near you, supplied by our nationwide network of wire rope mill depots

Bethlehem Steel Company, Bethlehem, Pa. Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

For more facts, use Request Card at page 18 and circle No. 370





The Perfection Hi-Lift hoist for men and materials is especially suited to bridge maintenance work.

Men-and-materials lift for bridge maintenance

Perfection Steel Body Co. announces a new Hi-Lift hoist and special platform body for use in bridge painting and other types of maintenance work.

The Hi-Lift hoist reportedly lifts men and materials to any height from truck-chassis level to more than 12 feet from the ground. Raising and lowering of the platform is hydraulically controlled from the truck cab and/or body.

The wide and long platform arm is said to give workmen sure footing, thus speeding up the job and reducing the possibility of personal injuries. The platform area also permits raising and handling large quantities of materials.

For further information write to the Perfection Steel Body Co., Dept. C&E, S. East St., Gallon, Ohio, or use the Request Card at page 18. Circle No. 46.

Announce new finisher for paving bridge decks

A new adjustable finishing machine for paving bridge decks has been announced as the latest addition to its product line by Cleveland Formgrader Co.

Lightweight and said to be easily maneuvered, the new finisher can handle widths of 20 to 55 feet. Bolt-on truss-type extensions in 5-foot increments make it possible to extend the 20-foot-wide basic main section.

The company reports that the machine has finished 32 cubic yards per hour of concrete with superior surface results. Additional highway trucks readily adapt the machine to highway use.

For further information write to the Cleveland Formgrader Co., Dept. C&E, Mills Road, Avon, Ohio, or use the Request Card that may be found bound in at page 18. Circle No. 47 on the card.

Report from Booming Texas...



Legal Payloads Increased to 24 Tons in Texas with Gar Wood Hoppers

Texas contractors can now legally haul 24 tons of payload by using a 20-cubic-yard Gar Wood semitrailer with a tandem axle tractor.

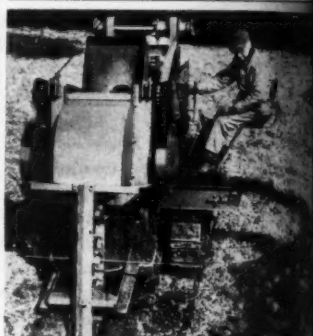
This payload increase is possible because Gar Wood has eliminated the dead weight of conventional truss-frame construction. Gar Wood's exclusive Mono-Shell hopper design greatly

reduces tare weight, and Gar Wood's mounting techniques distribute more load over a much greater axle span.

Gar Wood hopper trailers are available in a wide range of open and enclosed models for train and semitrailer operation, with a choice of seven types of discharge gates for every hauling need.

GAR WOOD WINCH SERVES AUSTIN COUNTY DRAINAGE DISTRICT

A Gar Wood 30,000-lb. winch, mounted on a self-locking oil field truck body, is being used to pull trees, load logs, boys, and for many tasks in bridge construction in the Austin County Precinct 3 Drainage District. Gar Wood is the world's largest manufacturer of both stationary and truck-mounted winches.



Buckeye 403 called "Best in close quarters"

"The Gar Wood-Buckeye 403 is the best machine made for close-quarter ditching," says Jack Kennemer, owner of the People's Trenching Service of Garland. Kennemer owns two 403's plus a Buckeye 308. His work is primarily in Central and North Central Texas, in terrain varying from caliche to gumbo.

"In tight work the 403 always gives us the proper depth of cut," he says. "It is compact, easily transported, and its operating cost is extremely low. It's a darn good little machine—the ideal machine for fast, accurate ditching in close quarters."

Houston Buys Load-Packer after Comparison Tests

Refuse collection in Houston is performed by a fleet of 29 Gar Wood Load-Packers. Many of the units are new—purchased after comparison tests of packer bodies by an independent Texas research lab. More Gar Wood refuse collection bodies are in service today than all other makes combined.



in dirt. Two Buckeye 160's (see photo) are used for all-purpose ditching in all types of soil.

FORT BEND DRAINAGE DISTRICT PICKS GAR WOOD DUMPS

Thirty miles southwest of Houston, the Fort Bend County Drainage District is



using three Gar Wood dump bodies.

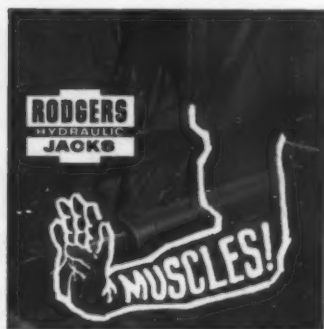
Gar Wood is the world's first and largest producer of dump truck equipment. Job-proven on thousands of trucks, handling every type of material, Gar Wood dump bodies usually outlast the truck itself. And the Gar Wood line of medium and heavy-duty hydraulic hoists allows a truck to be specifically designed for specific hauling requirements.

Gar Wood truck equipment is more than just "ruggedly built." It is designed with scientific precision for light weight and the utmost resistance to stress and strain.

DALLAS GOES GAR WOOD FOR MUNICIPAL DITCHING

The city of Dallas uses four ditchers to handle noncontracted work within the city limits. All four are Gar Wood-Buckeyes.

These machines are operated primarily by the Dallas Water Construction Department to ditch for new water lines. A Buckeye 308 is employed when the digging is through hard limestone rock. A Buckeye 407 is used primarily



for Jacking, Lifting, Pressing, Pulling...

To push the largest concrete tunnel shields or sewer pipe into place, to raise bridges, move buildings, to set reinforced concrete decking, to prestress concrete forms... for any jacking, lifting, pressing or pulling job requiring high-pressure hydraulic equipment, you can depend upon RODGERS Jacks. Immediate delivery, sizes from 50 to 600 tons. Outline your requirements to us and let our engineers suggest the equipment best suited to your needs.

J-101D

RODGERS HYDRAULIC, INC.

Pioneer in high-pressure hydraulics, since 1932
7401 Welber St. • Minneapolis 26, Minnesota

For more facts, circle no. 372

Self-propelled mixer for soil stabilization

A new, self-propelled, in-place soil-stabilization machine has been introduced by the Road Machinery Division of Bros, Inc. Called the Model SPRM-84 Roto-Mixer, it is a heavy-duty rig for mixing, blending, aerating, and pulverizing windrowed and subsurface materials to a maximum depth of 10 inches.

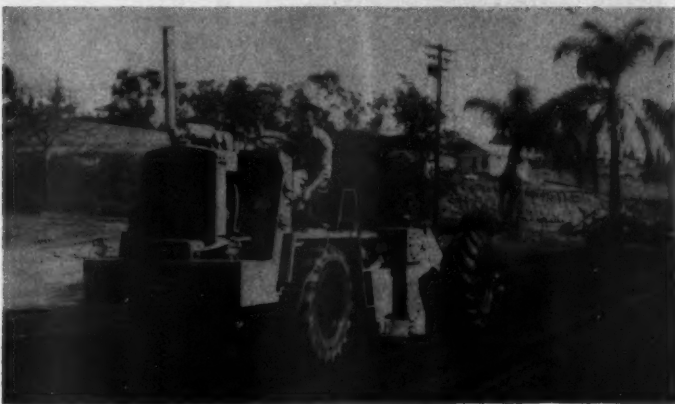
Mixing and blending of windrowed gravel materials is accomplished at rates of 3,000 to 5,000 cubic yards per hour, according to the manufacturer. Subsurface mixing of scarified materials is done at rates up to 1,000 cubic yards per hour.

Among special features are the

pivotal rear wheels. These can track the front wheels where working conditions permit, but they are quickly and easily swung out to a width of 10 feet for windrow work or aeration.

The SPRM-84 is powered by a diesel engine rated at 140 net usable horsepower at 1,800 rpm. It has 12 closely arranged forward speeds through a range of .5 to 8.5 mph, and three reverse speeds. Turning radius is 23 feet.

For further information write to Bros, Inc., Road Machinery Division, Dept. C&E, 1057 Tenth Ave. S.E., Minneapolis 14, Minn., or use the Request Card that is bound in at page 18. Circle No. 121.



Bros' new SPRM-84 Roto-Mixer reportedly can mix and blend windrowed material at the rate of up to 5,000 cubic yards per hour.

GAR WOOD'S AT WORK!

Dallas Contractor Rips Through Rock with Seven Buckeye Ditchers



GAR WOOD-BUCKEYE 407, owned by Ray F. Smith & Son, Dallas general contractor, cuts a straight, clean ditch through rocky Texas terrain. This ditcher is one of seven Buckeyes owned by the contractor.

Around the areas of Dallas and North Central Texas the terrain is rocky, much of it hard limestone. To ditch profitably through this ground you need a ditcher with both rugged construction and plenty of digging power.

Dallas contractor, Ray F. Smith owns seven such machines—all of them Gar Wood-Buckeyes. "Two-thirds of our work is in rocky terrain," says Smith, "and Gar Wood-Buckeyes makes the best machines for our kind of work. Each one is designed for fast, profitable operation."

Smith's machines are getting a real workout (the Dallas area is growing fast) but maintenance costs for his seven Buckeyes have been extremely low—one important reason why Smith has gone exclusively Gar Wood-Buckeye.

There are other reasons. Every major engineering development in ditching for the past 68 years has been found first on Buckeye ditchers. Today, Gar Wood continues to set the standards in the field. From mammoth pipeliners to small utility machines, Gar Wood-Buckeye ditchers are setting records for high production, low maintenance, and long, trouble-free operation.

More and more contractors, like Ray Smith, are realizing that whatever the job, no other ditching machine can match a Buckeye for performance, production, and profit.



Ratliff's satisfaction with Buckeye ditchers is the result of Gar Wood's constant engineering efforts to help contractors make a substantial profit—by giving them far more ditching production at far less cost.

GAR WOOD INDUSTRIES, INC.

Wayne, Michigan • Findlay, Ohio

New rotary drill bores through concrete, rebar

The Roto-Imp Model JL-200 tool, offered by Bill Jack Scientific Instrument Co., is a portable, heavy-duty, rotary-impact core drill designed to drill holes from 1½ to 6 inches in diameter through fully aged concrete, and to cut through rebar of ¾ to ¾-inch diameter.

Said to be extra rugged in construction, the unit's 1½-hp motor and heavy-duty gear train are de-



signed for continuous use, rotating at 1,200 rpm and delivering simultaneously 7,200 impacts per minute at the drill bit tip.

For further information write to Bill Jack Scientific Instrument Co., Dept. D-10 Tool Division, Dept. C&E, Solana Beach, Calif., or use the Request Card at page 18. Circle No. 26.

New welder doubles as ac power plant

An engine-driven dc welder that also serves as an ac power plant is offered by Harnischfeger Corp.

Rated at 200 amp, 50 per cent duty cycle, the new unit delivers 3½-kw 120-volt ac 60-cycle current for lighting and electric tools. Power is supplied by a 2-cylinder, 4-cycle air-cooled gasoline engine of 12.8 horsepower at 2,600 rpm, complete with 12-volt electric starter.

Skid or dolly-mounted, the new combination P&H welder and power plant weighs less than 500 pounds.

For further information write to Harnischfeger Corp., Dept. C&E, 4400 W. National Ave., Milwaukee 46, Wis., or use the Request Card at page 18. Circle No. 40.

Fort Worth Contractor Calls Buckeyes

"FINEST MACHINES I'VE EVER USED!"

For ditching through this Texas chalk-rock, there's no question about it—Buckeyes are the best machines I've ever used."

This statement by John Ratliff, General Manager of the Glade Construction Company of Fort Worth, is typical of the high praise, contractors across the country have for Gar Wood-Buckeye ditchers.

Ratliff is currently using two Buckeyes, a 315 and a 307, for general construction ditching in the Fort Worth and Austin areas. He has been using Buckeyes continually for more than 18 years.

For more facts, use Request Card at page 18 and circle No. 373



Atomic Reactor Facility, Cornell University, Ithaca, N.Y.

Catwalks Haunches Poured Together with Symons Steel-Ply Forms

Rouse Construction Company, Gouverneur, N.Y., with Symons Steel-Ply Forms was able to pour the walk around the reactor along with the catwalk and haunch above it monolithically. Pours approximated 16 feet per lift on this phase of the project. Symons Steel-Ply Forms are rented with purchase option. Symons Clamp & Mfg. Co., 4251 Diversey Avenue, Dept. E-1, Chicago 39, Illinois.

For more facts, use Request Card at page 18 and circle No. 374

Names in the News

F. H. McGraw elects two to board of directors

F. H. McGraw & Co., engineering and construction firm of New York, N. Y., has elected vice presidents Maurice Knopf and Joel Morris to its board of directors.

Knopf, general manager of the firm's redevelopment activities for the past two years, has been an officer of McGraw for more than a year. He is in charge of domestic operations. Morris was chief engineer for seven years before becoming a vice president in 1958. His duties include new business and special projects.

Surveyor group installs new slate of officers

Newly elected officers of the Civil Engineers and Land Surveyors Association of California are E. F. Koenig, Engineer Service Corp., president; A. M. Fickes, Boyle Engineering Co., vice president; and Hugh E. Halderman, of Jennings, Halderman, Inc., secretary-treasurer.

Retiring president A. Richard Brown, Jr., was honored at the installation ceremonies with a plaque in recognition of his service to the organization during the previous year.

Thomas A. Scott dies

Thomas A. Scott, first president of Merritt-Chapman & Scott Corp., died on April 5 at Medical Arts Center Hospital, New York. He was 83.

Scott was president of the T. A. Scott Co., a firm founded by his father at New London, Conn., in 1923 when it merged with the Merritt-Chapman organization. He continued as president of the new corporation. He was later elected chairman of the M-C&S board of directors and served as honorary chairman from 1951 to 1960.

Leavell names four veeps

C. H. Leavell & Co., general contractor and construction engineering firm of El Paso, Texas, has elected four new vice presidents.

Joe Lea is vice president for administration and fiscal matters. He was formerly company treasurer. James D. Abrams has been named vice president of operations. He previously served as project manager on the company's Titan missile project in South Dakota.

D. J. Bandy is Leavell's third newly appointed vice president. He is stationed in Houston as district manager, and is currently overseeing construction of the \$11 million post office the organization is building there. Claude Smith, district manager in Los Angeles, has been promoted to vice president. He will continue to headquarter on the West Coast.

Corps assignments

Lt. Col. Daniel A. Raymond has been assigned as district engineer for the U. S. Army Corps of Engineers at Mobile, Ala. Presently a student at the U. S. Army War College, Carlisle Barracks, Pa., he will succeed Col. Robert W. Love, who is being assigned overseas this summer.

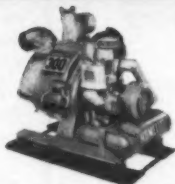
Lt. Col. Richard L. Hennessy has been assigned as district engineer at Rock Island, Ill. He is currently commanding officer, 160th Engineer Group, Fort Knox, Ky.

Col. R. C. Pfeil is the new district engineer of the Detroit District. He was previously a member of the faculty and staff of the Command

Choose from a complete line of:

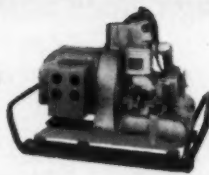
HOMELITE CARRYABLE EQUIPMENT

HOMELITE 2 CYCLE ENGINE DRIVEN CARRYABLE PUMPS



Size	Capacity	Wt. in lbs.	Model
CENTRIFUGAL PUMPS			
1½"	5,500 g.p.h.	45	20S1½
2"	10,000 g.p.h.	69	35S2-1
2"	10,000 g.p.h. (slow speed)	69	35S2-1R
3"	18,000 g.p.h. (slow speed)	103	8S3-1
3"	18,000 g.p.h.	103	8S3-1R
3"	102 g.p.m. at 60 p.s.i. 250 g.p.m. — open discharge	103	8S3-1P
DIAPHRAGM PUMP			
3"	5,000 g.p.h.	120	20DP3

HOMELITE 2 CYCLE ENGINE DRIVEN CARRYABLE GENERATORS



Capacity (Watts)	Current	Wt. in lbs.	Model
1,500	115 volt, 60 cycle, AC	90	35A115
3,000	115 volt, 60 cycle, AC	140	8A115
3,000	115/230 volt, 60 cycle, AC	141	8A115/230
3,000	230 volt, 180 cycle, 3-phase AC plus 110 volt DC	143	8HY

4 Cycle Engine Driven Pumps and Generators also available



HOMELITE ONE-MAN CONCRETE VIBRATORS

Type	Head Dia.	Motor	Wt. (Complete)	Model
Motor-in-head	2.3"	High-Cycle*	47 lbs.	VH-LD
Motor-in-head	2½"	High-Cycle*	41 lbs.	VH-10
Motor-in-head	4"	High-Cycle*	58 lbs.	VH-HD
Motor-in-head	2¾"	110 v. AC-DC	42	VU-MH
Flexible Shaft	1½", 1¾", 1½"	110 v. AC-DC	41	MU-FS

HOMELITE CHAIN SAWS

QUICK SELECTOR GUIDE
FOR EVERY CUTTING NEED



Model	Wt. in lbs. (Engine Only)	Type of Drive	Tree Sizes Model Will Cut (Dia.)	Straight Blade Bar Lengths
500	19	Direct	Up to 3"	12" to 21"
600D	18	Direct	Up to 4"	12" to 30"
Z1P	20	Direct	Up to 3"	12" to 21"
W1Z	20	Gear	Up to 5"	14" to 28"
700D	19	Direct	Up to 5"	12" to 30"
700G	21	Gear	Up to 7"	15" to 60"
900D	23	Direct	Up to 7"	17" to 44"
900G	26	Gear	Up to 10"	18" to 60"

For more facts, use Request Card at page 18 and circle No. 375

ELECTRIC TOOLS



BUILDER'S HAMMERS

Weight	Capacity (Drill Sizes)	Motor	Model
13 lbs.	¼" to 1½"	115 volt AC-DC	BH-13-U
21 lbs.	½" to 2½"	115 volt AC-DC	BH-21-U
20 lbs.	½" to 2½"	High-Cycle*	BH-HC

PAVING BREAKER

Does all jobs that a 55-60 lb. air hammer will do. High-cycle motor. Weight: 60 lbs.

ROCK DRILL

Drills holes up to 3" in diameter, up to 20' deep. High-cycle motor. Weight: 55 lbs.

A complete line of accessories and tools are available from Homelite for the above builder's hammers, paving breakers, and rock drill.

*180 cycle, 230 volt, 3-phase AC power for high-cycle tools is supplied by carryable Homelite generator, Model 8HY.

HOMELITE

A DIVISION OF TETTRON INC.
9605 RIVERDALE AVE., PORT CHESTER, NEW YORK
WRITE FOR FREE FULL LINE CATALOG
IN CANADA: TERRY MACHINERY CO., LTD.

and General Staff College, Fort Leavenworth, Kans.

Lieut. Gen. E. C. Itschner, Army chief of engineers, has retired from active service. He is now chief technical advisor on the Indus River Project in Pakistan for the Harza Engineering Co.

Dravo appointments

Charles R. Lorenz, Jr., has been named assistant to the president of Potomac Sand & Gravel Co., Washington, D. C., a subsidiary of Dravo Corp., Pittsburgh. He has been manager of the South Side (Pittsburgh) plant of the corporation's Keystone Division since 1958.

H. Verne DeWalt, formerly a salesman in the Keystone Division, has

been appointed the new manager of the South Side plant.

Donald R. File is the new manager of the Rochester, Pa., plant.

Consulting firm opens Washington office

Lockwood, Kessler & Bartlett, Inc., engineering consultant firm of Syosset, N. Y., is opening a Washington, D. C., office.

Marshall S. Wright, Jr., has been named manager of the new office. He has held engineering positions with various firms, and prior to that was engaged in research and development in photogrammetric equipment and methods at the U. S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va.

Highway appraiser named

The Montana State Highway Commission, Helena, Mont., has appointed Scott Johnson reviewing appraiser in charge of right-of-way appraising and appraiser training. He was formerly a senior right-of-way appraiser for the Washington Department of Highways.

Rackoff adds partner

A. G. Cochran has become a partner in Rackoff Associates, engineering firm of Columbus, Ohio.

Cochran has had more than 30 years' experience in engineering and allied fields. Since 1957 he has been president of the Clay Sewer Pipe Association with offices in Columbus.

Prior to that, he was managing director of the Ohio Concrete Pipe Manufacturers Association. Earlier, he served in various capacities with the American-Marietta Corp. He began his career as a highway engineer in the Ohio Department of Highways.

Leavell safety award

James F. McCann, a project manager for C. H. Leavell & Co., contractor and construction engineering firm located in El Paso, Texas, received the company's 1961 safety award during its superintendents' safety conference, held last month.

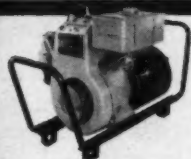
McCann won the award for work on company projects at White Sands Missile Range, N. Mex.

HOMELITE 4-CYCLE ENGINE-DRIVEN PUMPS AND GENERATORS



PUMPS

Size	Capacity	Wt.	Model
1½	7000	55	43S1½
2	9000	58	44S2
3	18000	95	45S3
3	4500	118	44DP3 (Diaphragm)



GENERATORS

Watts	Current	Wt.	Model
1500	115 Volt AC	104	46A115
3000	115 Volt AC	170	41A115
3000	115/230 Volts AC	170	41A115/230
5000			
(Int.)			
4500	115/230 Volts AC	250	42A115/230
(Cont.)			



Homelite Floodlights make night work easier and more efficient by flooding work area with brilliant lighting. Rugged cast-aluminum housings assure long service life. Quick release cable connectors make set up and break down easy — no tangled cables. Standard sealed-beam 300 or 500 watt floodlights or spotlights are used — no bulb replacement problems.

HOMELITE

A DIVISION OF TETRON INC.
565 Riverdale Ave., Port Chester, New York
In Canada: TERRY MACHINERY CO. LTD.

For more facts, circle No. 376

B&D acquires French firm

The Black & Decker Mfg. Co., Towson, Md., has acquired a majority interest in the French firm Socomeda (Societe de Constructions Mecaniques du Dauphine), a subsidiary of Landis-Gendron, S. A., which is owned by Landis Tool Co., Waynesboro, Pa.

Socomeda, which has headquarters in Lyon, manufactures a variety of portable electric tools. Its grinders, blowers, and high-frequency electric tools are marketed under the Micox brand. A line of specially insulated electric tools is known as Micox-Isal.

Socomeda will continue to manufacture these products, as well as Black & Decker tools, for European markets.

Yale & Towne names

The Trojan Division of The Yale & Towne Mfg. Co., Batavia, N. Y., has named Robert G. Allan, Jr., and Thomas R. Westrope district sales representatives for its tractor-shovel line. Their headquarters will be in Batavia, N. Y., and Des Moines, Iowa, respectively.

Allan will be in charge of Trojan sales in Kentucky, Michigan, Ohio, West Virginia, and all of Pennsylvania west of Harrisburg. Before joining Trojan's sales department last year, he was personnel manager of the division.

Westrope will cover Illinois, Indiana, Iowa, Minnesota, eastern Missouri, Nebraska, North and South Dakota, and the province of Manitoba in Canada. He was formerly associated with The Thew Shovel Co.

Barnes names manager

Robert L. Sears has been named manager of construction and industrial sales for Barnes Mfg. Co., Mansfield, Ohio, maker of pumps and water systems. He will be in charge of all special-markets sales efforts beamed at the construction and heavy-industries market.

He previously was sales manager of the Service Station Pump and Meter Division of the A. O. Smith Corp., and district representative for Gorman-Rupp.



EIMCO 126 FRONT END LOADER

Before you buy your next Front End Loader,

ask yourself these questions:

- "Is it really the best?"
- "Am I habit-buying my crawler equipment?"
- "Are my maintenance costs satisfactory?"
- "Do I know I can't do better?"

To make sure you have the answers, check the quality-crafted Eimco series of diesel-powered Front End Loaders and Excavators. Engineered and built by the world's largest, most successful builder of loaders for tough, rough underground rock loading, any Eimco will outproduce, outload, outmaneuver and outlast any other crawler unit in its class. We've got the facts to back these claims! Write The Eimco Corporation, P.O. Box 300, Salt Lake City 10, Utah, U.S.A. for the Dealer or Branch nearest you and for Bulletin LE-1097.



For more facts, use Request Card at page 18 and circle No. 377

Product Literature

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 18.

Aggregate-drying units—a folder illustrating and describing the Hopkins Volcanic line of burners for aggregate dryers, and hot-oil heaters. Operational features described. Specifications; cutaway drawing.

Write to Hopkins Volcanic Specialties, Inc., Dept. C&E, 201 Hartzell W. Ave., Alliance, Ohio, or use the Request Card at page 18. Circle No. 115.

Oil-bath air cleaner—a bulletin describing the low-resistance Model C Type P Cyclo industrial oil-bath air cleaner with pneumatic oil lift. Contains complete information as to the operation of the unit for smooth-flow applications in any kind of weather. Detailed and dimensional drawings. Bulletin No. 160-C.

Write to the American Air Filter Co., Inc., Dept. PD, Dept. C&E, 215 Central Ave., Louisville 8, Ky., or use the Request Card at page 18. Circle No. 84.

Lime in asphalt paving—a 16-page bulletin relating how hydrated lime reportedly improves hot asphalt mixes. Data on specific jobs illustrates advantages. Test information is also included. Bulletin 325.

Write to the National Lime Association, Dept. C&E, 925 15th St. N.W., Washington 5, D. C., or use the Request Card at page 18. Circle No. 104.

Rebar tie wire—literature describing the uses and advantages of Sterling rebar tie wire for the belt-type reel dispenser. Application photos.

Write to the Northwestern Steel & Wire Co., Dept. C&E, Sterling, Ill., or use the Request Card at page 18. Circle No. 98.

Curing paper—a folder describing the advantages of using Roadblankets—made of reinforced waterproof paper—in curing highway concrete. Compares the moisture-retention characteristics of various curing devices. Specifications.

Write to Glas-Kraft, Inc., Dept. C&E, Slatersville, R. I., or use the Request Card at page 18. Circle No. 111.

Submersible pump—a well illustrated color brochure describing the new Model 3VSI submersible dewatering pump. Contains performance data, specifications, a multicolor cross-section drawing, and application and product pictures. Form 1-VS-11.

Write to The Gorman-Rupp Co., Dept. C&E, 305 Bowman St., Mansfield, Ohio, or use the Request Card at page 18. Circle No. 94.

Air-powered boring unit—a bulletin illustrating and describing the Ka-Mo A-20 lightweight air-powered boring unit capable of augering 2½ to 16-inch diameters. The unit can be

used with a wide range of cutting heads and auger sections and is suitable for boring in water, sewer, and highway work. Capacity chart included. Bulletin KAM-805.

Write to the Kwik-Mix Co., division of Koehring Co., Dept. C&E, 235 W. Grand Ave., Port Washington, Wis., or use the Request Card at page 18. Circle No. 75.

Pneumatic roller—a data sheet on the Rosco Air-Pac compact self-propelled roller. Features include oscillating wheels, clear operator visibility, working speeds to 3½ mph forward or reverse, and geared-type steering. Illustrations; specifications.

Data Sheet 575 R.

Write to the Rosco Mfg. Co., Roller Division, Dept. C&E, 3118 Snelling Ave., Minneapolis 6, Minn., or use the Request Card at page 18. Circle No. 77.

Roadside spray mulch—a booklet illustrating the application of Vulcanol, a spray mulch for controlling soil erosion and speeding seed germination along highways. Color photographs.

Write to the Alco Oil & Chemical Corp., Dept. C&E, Trenton Ave. and William St., Philadelphia 34, Pa., or use the Request Card at page 18. Circle No. 102.

GET REAL PRODUCTIVITY



When you get 10 years' service from a Diesel, and spend only \$27.00 for repairs, you're dollars and dollars ahead of the game.

And that has been the exact experience of Corpus Christi's A. E. Hinman Construction Company.

They put a 3-71 GM Diesel in a Koehring 304 ten years ago... added up their engine repair bills recently and discovered the only expense they'd

had in all that time was \$27 for injector repairs.

And in those ten years, the "Jimmy" Diesel has averaged about 2,000 hours per year—worked on all kinds of general construction jobs throughout South Texas.

President A. E. Hinman says, "We bought the GM Diesel because other operators had told us 'Jimmies' were trouble-free and very economical to

operate." Now, with a decade of more or less extra cost operation behind him, he's got a first-hand proof.

You'll get more productivity—profits—from your equipment with GM Diesels in your equipment. Got what you need? Parts interchangeability, for instance, will save you big money. Proof? Write your GM Diesel distributor—the Yellow Pages under "Engines"—or write us direct.

NEW

ESCO FLARE
REGISTERED TRADEMARK

BARRICADES & LIGHTS



Esco manufactures the most complete line of flasher lights and barricades on the market. Our heavy duty barricades are designed for maximum economy of operation. Will not blow over. Rugged heavy-duty guard. Finished with baked-on enamel. Write today for free illustrated catalog.

ELECTRONIC SPECIALTIES CO.
BATAVIA 3, ILLINOIS

For more facts, circle No. 378

GM DIESEL ALL-PURPOSE

CONTRACTORS AND ENGINEERS

Concrete paver—a folder entitled "Pave Your Way To Concrete Profits." Illustrates and describes the Koehring Tribatch concrete paver. Principal design innovations—3-compartment mixing drum, pressure-injection water system, electric batchmeter—are also described. On-the-job photos. Write to the Koehring Co., Koehring Division, Dept. C&E, 3026 W. Concordia Ave., Milwaukee 16, Wis., or use the Request Card at page 18. Circle No. 72.

Industrial tractors—a 20-page catalog describing International Harvester's complete line of nine industrial tractors and a variety of matched equipment. Covers the full range of industrial applications such as digging, earthmoving, material handling, cable laying, etc. Also in-

cludes trailers for high-speed transport and custom equipment to improve versatility. Catalog CR-100-L.

Write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card that is bound in at page 18. Circle No. 83.

Dump trailer—a folder giving full information on the Hydra-Shift Pay-Pac dump trailer, designed to hydraulically position the dump body on the trailer chassis to provide maximum legal axle loads in all states. Construction and operation features are described and illustrated. Form P-1-161.

Write to Spencer-Safford Loadcraft, Inc., Dept. C&E, Augusta, Kans., or use the Request Card at page 18. Circle No. 150.

Stabilization manual—a handbook on calcium chloride for stabilization of bases and wearing courses, written for contractors, highway engineers, and suppliers. Properties, design, types and methods of construction, and specifications are covered. Recommendations based on field application and laboratory research. Manual SM-1.

Write to the Calcium Chloride Institute, Dept. C&E, 909 Ring Bldg., Washington 6, D. C., or use the Request Card at page 18. Circle No. 110.

Prestress strand—literature giving specifications and other information on Leschen high-strength stress-relieve strand for prestressed concrete. Typical stress-strain curves for $\frac{3}{8}$ and $\frac{7}{16}$ -inch, 7-wire strand are given in table form, along with physi-

cal properties. Uses of prestressed-concrete beams are illustrated.

Write to the H. K. Porter Co., Inc., Leschen Wire Rope Division, Dept. C&E, 2727 Hamilton Ave., St. Louis, Mo., or use the Request Card at page 18. Circle No. 95.

Welding, safety equipment—a 16-page catalog describing Jackson welding accessories and safety equipment. Items include arc-welding electrode holders, ground clamps, cable connectors, etc., and such safety devices as hats, caps, helmets, goggles, and face shields.

Write to Jackson Products, Air Reduction Sales Co., Dept. C&E, 31739 Mound Road, Warren, Mich., or use the Request Card at page 18. Circle No. 112.

Replacement axles—a 76-page catalog of U. S. Axle replacement axles. Quick-reference application listings containing manufacturer's part number, type and number of splines, shaft length, spline diameter, number and size of holes, etc. Catalog No. 20.

Write to The U. S. Axle Co., Inc., Dept. C&E, Water St., Pottstown, Pa., or use the Request Card at page 18. Circle No. 108.

Screw-type compressor—an illustrated folder describing the new Gardner-Denver Rota-Screw portable air compressors. Complete operational data is given on the three models available. Cutaway drawings, specification table.

Write to the Gardner-Denver Co., Dept. C&E, S. Front St., Quincy, Ill., or use the Request Card at page 18. Circle No. 88.

Trencher teeth—a 4-page folder illustrating Pengo trencher teeth and detailing their uses and advantages. Photographs show the teeth on a variety of digging machines. Bulletin TR-2.

Write to the Petersen Engineering Co., Inc., Dept. C&E, Box 330 A, Santa Clara, Calif., or use the Request Card at page 18. Circle No. 85.

Reinforcing bars—a brochure describing the new Laclede high-strength steel reinforcing bars. Tensile properties are given, and diagrams of stress-strain and ultimate-strength comparisons. Table of physical properties and allowable working stresses.

Write to the Laclede Steel Co., Dept. C&E, Arcade Bldg., St. Louis 1, Mo., or use the Request Card at page 18. Circle No. 87.

Highway erosion problems—a brochure setting forth the advantages of Soil Saver, a woven jute mesh designed to hold seed and soil intact on bridge abutments, median strips, and shoulder ditches to prevent erosion during rainstorms. Application photos.

Write to Ludlow Textile Products, Dept. C&E, Needham Heights 94, Mass., or use the Request Card at page 18. Circle No. 103.

Drafting equipment—a product and planning guide generously illustrating the Hamilton line of drafting and tracing tables, files, and accessories. Specifications, cutaway drawings.

Write to the Hamilton Mfg. Co., Dept. C&E, Two Rivers, Wis., or use the Request Card at page 18. Circle No. 116.

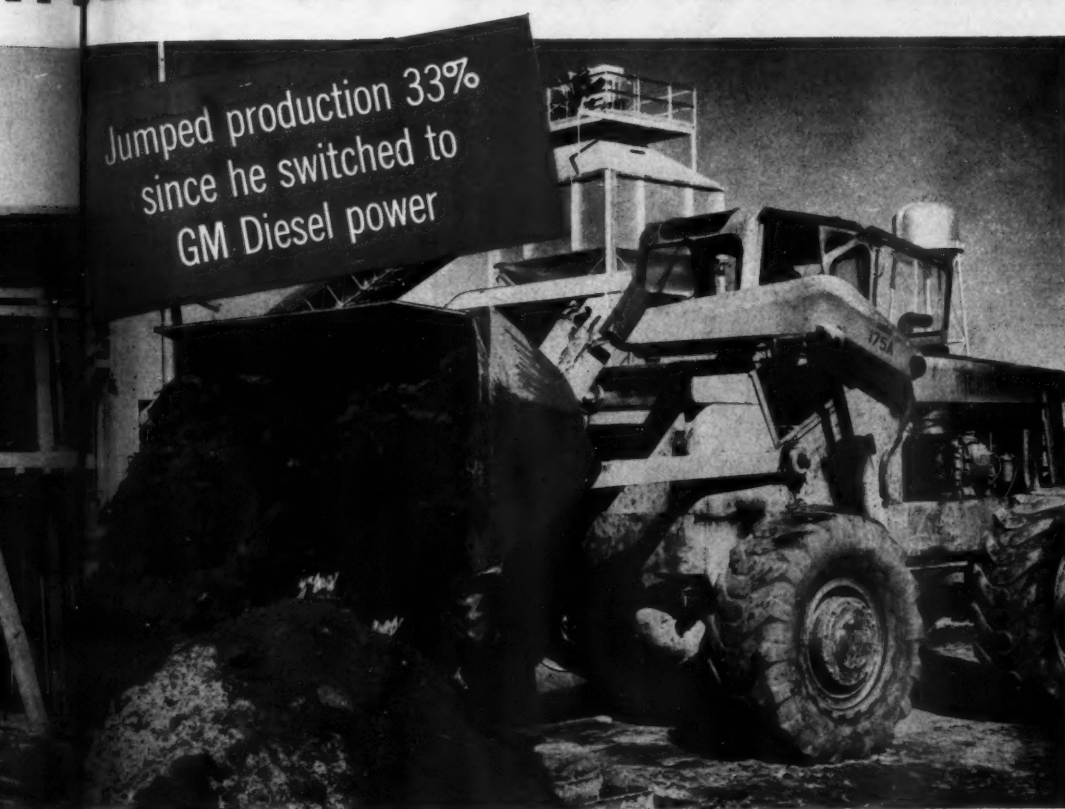
Asphalt-paving trends—reprint of a paper by two Barber-Greene officials on trends and recent developments in asphalt paving, delivered at the March ARBA convention. Illustrations of plant setups. Paper is entitled "Modernizing for Better Roads."

Write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 89.

Surveying instruments—an illustrated catalog describing the Kern line of surveying instruments. Complete specifications; circle readings

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Air tools—a 48-page catalog containing a comprehensive lineup of Thor pneumatic tools for a variety of contractor operations. Diagrams detail tool features. Complete specifications. Catalog No. 46.

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Versatile excavator—a specification sheet on the Lev-L-All grader attachment for mounting on the M-F Model 202 Work Bull. Operates as a maintainer, grader, leveler, and ditcher. Illustrations.

Write to the Massey-Ferguson Industrial Division, Dept. C&E, Block 1000 S. West St., Wichita 13, Kans., or use the Request Card at page 18. Circle No. 105.

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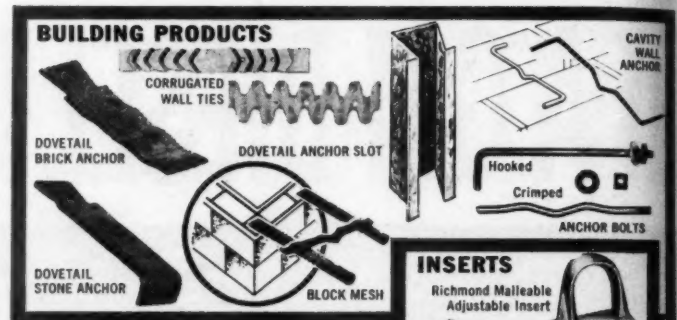
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CONTRACTORS AND ENGINEERS

Product Literature—

selecting an air compressor, complete product descriptions, and a 4-page section of accessory items. Complete specifications given.

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Concrete saws—a folder describing the Clipper line of concrete joint saws, longitudinal saws, blades, and joint sealers. Illustrations, specifications, description of auxiliary equipment.

Write to the Clipper Mfg. Co., Dept. C&E, 2800 Warwick, Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 93.

Grading operations—an illustrated brochure describing various applications of motor graders for all-around production use. Information on Cat graders, attachments, and matched equipment is included. Booklet D102.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 86.

Welding equipment—a bulletin describing Lincoln's complete line of arc-welding products. Information on correct electrode selection for various types of application. Arc characteristics, welding procedures, and physical properties listed for each type of electrode. Bulletin 7000.7.

Write to The Lincoln Electric Co., Dept. C&E, 22801 St. Clair Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 114.

Concrete pipe—a 24-page booklet entitled "The Story of Concrete Pressure Pipe." Explains the principle of prestressing and describes the procedures for manufacturing, installing, and tapping pressure pipe. Table of types and sizes, photographs, drawings.

Write to the Price Bros. Co., Dept. C&E, 1932 E. Monument Ave., Dayton 1, Ohio, or use the Request Card at page 18. Circle No. 76.

Fastener guide—an engineering guide for selecting large fasteners and construction accessories in bolt diameters of 1 1/4 inches and up. Lists complete specifications for threaded rods, clevises, and turnbuckles. Also included are descriptions of typical applications of fasteners engineered for specific requirements. Bulletin 1260.

Write to Jos. Dyson & Sons, Inc., Dept. C&E, 5125 St. Clair Ave., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 82.

Compaction rollers—a folder illustrating and describing briefly Hercules heavy-duty and medium-duty tamping rollers, pneumatic pull-type rollers, and the Pneum-A-Factor self-propelled roller. Bulletins giving detailed specifications are listed. Bulletin No. 108.

Write to Wichita Steel Fabricators, Inc., Dept. C&E, 3400 N. Broadway, Wichita 14, Kans., or use the Request Card at page 18. Circle No. 92.

Bituminous-stabilized roads—an 8-page booklet detailing the construction of bituminous-stabilized roads and describing the equipment used, the procedures involved, and suitable binders. Illustrated. Bulletin No. 1032.

Write to the American-Marietta Co., Construction Equipment Division, Dept. C&E, 13050 Blue Mound Road, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 101.

Electric arc gun—a descriptive circular on the Beeco "six-in-one" electric arc gun, which serves as a spot welder, stud welder, tack welder, button welder, hole burner, and riveter. Various applications, construction and design features of the Six Shooter stressed. Also includes illustrations of nozzle attachments available for specific applications.

Write to the Beeco Mfg. Corp., Dept. C&E, P. O. Box 116, Cranford, N. J., or use the Request Card at page 18. Circle No. 80.



LOW COSTS AND BIG PAYLOADS are provided to the Brewster Equipment Co., Bogota, N. J., by this Challenge-Cook Model BDS-2C semitrailer pulled by a Mack truck, which is here being loaded by a Lorain shovel. Six of the lightweight bottom-dump rigs are being used by the firm in its job on approach areas for the second level of the George Washington Bridge. The rigs haul blasted traprock 7 miles over heavily traveled roads from the work site to the company's main plant in Bogota for crushing. The truck-trailer combinations hit the 35 mph speed limit all the way, and the trailers unload in about 60 seconds if the hopper is clear.



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For complete ordering information, write us for a copy of the Amsco Simplex Buyers' Guide.

*Patent No. 2,904,908



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With some 150 Rainbird 30 sprinklers operating at one time, 600 gpm of water is applied to areas of highway cuts for a new interstate route that will cut 40 miles off the present route linking Gillette and Buffalo, Wyo. Sprinklers are moved when runoff occurs and replaced if more water is necessary.

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FOR DEPENDABLE PROTECTION on all Hydraulic and other low pressure circulating systems

Designed to give more ACTIVE filtering area—MORE dependable protection—MORE productive operation before cleaning is necessary. Meet J.I.C. Standards.



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CAPACITIES: 5-8-10-20-30-50-75 and 100 G.P.M.

PIPE SIZES: 1/2"-1"-1 1/4"-1 1/2"-2"-2 1/2" and 3".

CONNECTIONS: Coupling—Male Nipple.

BY-PASS VALVE: Not Available.

Synclinal LINE TYPE

CAPACITIES: 5-8-10-20-30-50-75 and 100 G.P.M.

PIPE SIZES: 1/2"-1"-1 1/4"-1 1/2"-2"-2 1/2" and 3".

BY-PASS VALVE: Not available.

OPERATING PRESSURES: Up to 80 p.s.i.



Bonded SUMP TYPE

CAPACITIES: 10-20-30-50 and 75 G.P.M.

PIPE SIZES: 1"-1 1/4"-1 1/2"-2"-and 2 1/2".

CONNECTIONS: Coupling—"O" Ring—Male Nipple.

BY-PASS VALVE: Available with or without

Bonded LINE TYPE

CAPACITIES: 10-20-30-50 and 75 G.P.M.

PIPE SIZES: 1"-1 1/4"-1 1/2"-2"-and 2 1/2".

BY-PASS VALVE: Available with or without.

OPERATING PRESSURE: Up to 250 p.s.i.

OPERATING TEMPERATURES: up to 300° F.



Tandem SUMP TYPE

CAPACITIES: 10-18-20-40-60-100-150 and 200 G.P.M.

PIPE SIZES: 1/2"-1"-1 1/4"-1 1/2"-2"-2 1/2" and 3".

CONNECTIONS: Coupling—Male Nipple.

BY-PASS VALVE: Not available.

IN-LINE FILTER

CAPACITIES: Up to 80 G.P.M.

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BY-PASS VALVE: Available with or without

FILTERING MEDIA in all Marvel Filters is Monel wire cloth available in mesh sizes of 30-40-50-60-80-100-150 and 200 to meet your filtration requirement.

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For more facts, use coupon.

Heavy sprinkling solves grading problem in cuts

Contractors and Engineers staff article

Irrigating any desert may come to be practically routine work for the crews of Industrial Pipelines, Inc., Holdrege, Nebr., which has been supplying water for the grading of portions of Interstate I-90 in the

Powder River area of northeastern Wyoming.

Pumping from a cluster of wells on the banks of the Powder River, the firm has been boosting the water through as much as 11 miles of 6-inch aluminum pipe rising as high as 900 feet above the river valley. On

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CONTRACTORS AND ENGINEERS

this system, 150 Rainbird sprinklers supply some 600 gpm of water around the clock. The application continues for days, weeks, or months until the areas on which the highway cuts are to be made have absorbed the amount of water necessary for proper compaction of fill material.

The Wyoming area lies about midway between Gillette and Buffalo. The 57-mile stretch between these cities is a hilly, practically uninhabited desert country penetrated by a few dirt roads that lead to widely scattered ranches and mining claims. Through the center of this almost barren expanse flows the Powder River. This stream may have been so named because it is as dry as powder during the prolonged dry season—or because it is as explosive as gunpowder following the cloudbursts common to the area during some seasons.

Industrial's crews had a taste of the river's explosive nature when a cloudburst upstream sent the river over its banks. Several of the wells and the pumps were damaged, and as a result, a mile and a half of pipeline was lost.

Route is bold realignment

The old highway connecting Gillette and Buffalo—U. S. 16—follows a roundabout alignment, making a huge loop to the north. As a result, the highway between these towns is some 97 miles.

In one of the longest and boldest realignments of the Interstate System, the new highway, I-90, is being slashed practically straight across this rugged area. Construction has been under way at both ends for several years and is currently nearing the middle. Here, the bridge over the Powder River is presently being built, and several grading contracts are under way nearby.

It was on two of these grading projects, 3-mile sections being graded by Roth Construction Co. and by Wilbur Christensen, both of Rapid City, S. Dak., that Industrial Pipelines, Inc., had the subcontracts to deliver and apply some 76 million gallons of

water last season. These grading projects lie to the west of the river in an area of steep hills that rise sharply from the river valley.

This year, Industrial has taken on subcontracts with Roth and Christensen and also with Rissler & McMurray Construction Co., Casper, Wyo., for the prewetting of an additional 19 miles of the right-of-way.

Wells in river valley

Since the ground-water supply within the Powder River flood plain was the only source of water available, the contractor drilled seven wells over an area of about half a square mile of the valley. These 16-inch wells, which averaged about 30 feet deep, were fitted with Layne &

(Continued on next page)

Hell is located on a county road about 15 miles southwest of Howell, Mich. Paradise isn't too far away. It's 50 miles northwest of Sault Ste. Marie.



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Designed on the proven rolling-weight principle that:

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PRIME-MOVER

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BENT MOUNTAIN BRIDGE WORK

Famed Skyline Drive in Virginia is getting a new look these days as a 40-ton, 43-M truck crane helps erect spans for an overpass situated 1900 ft. up the side of Bent Mountain near Roanoke. Using positive-acting Marionair control, these 35-ton prestressed beams are quickly hoisted in place with pinpoint accuracy.

Because of the steep switchbacks and narrow, short turns, the trucks which hauled the concrete beams had to be lifted around some of the curves. The Marion handled the job easily...without outriggers.

More proof that Marion cranes are the machines for you? Your nearest Marion distributor has it.

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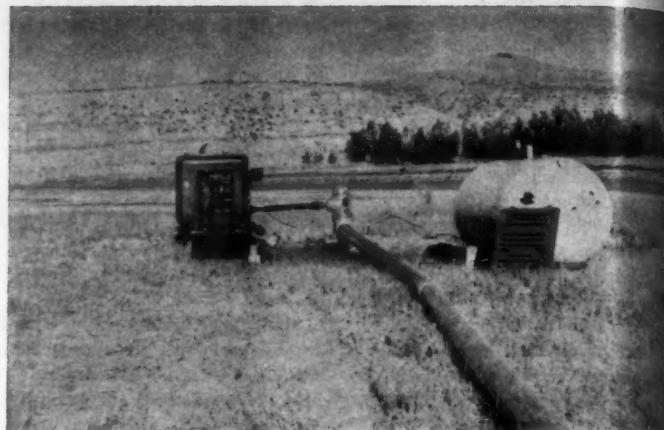
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A number of wells in the Powder River flood plain contribute to this million-gallon ground tank that supplies water through a 6-inch aluminum pipe to the barren right-of-way some 11 miles distant. Pumping is done by a Gorman-Rupp pump with a Chrysler engine.



Well in advance of grading so that vegetation can aid water penetration, the irrigation subcontractor was able to get water to the full 60-foot depth of the deepest cut in preparation for the grading. A crude road follows the line over the hilly desert area to enable crews to move the sprinklers from one place to another.



One of the wells is fitted with a Layne & Bowler vertical turbine pump driven through an Amarillo drive by a butane-burning engine.

(Continued from preceding page)

He can't DO what you want ... if he can't HEAR what you SAY!



No need to scream your head off uselessly! With Audio Hailer you can project spoken commands ... like a harpoon ... over a half-mile range ... in any direction!

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Bowler vertical turbine pumps. Each pump was driven by a separate gas engine through an angle-head drive. The engines burned butane, which was supplied from 1,000-gallon tanks set near each well.

Aluminum feeders and mains gathered the water from the seven wells and delivered it to a million-gallon ground-storage tank built at a convenient site near the west bank of the flood plain.

Boosters take water to hills

Set up at the edge of the ground tank, a Gorman-Rupp 4-inch pump powered by a Chrysler industrial engine started the water on its way through the 6-inch aluminum mains that led up the steep valley sides and off through the hills. Maintaining a pressure head of about 185 psi, this pump raised the water 1 1/2 miles to the first booster pump, which was set some 300 feet above the river valley.

Other boosters at about 1 1/2-mile

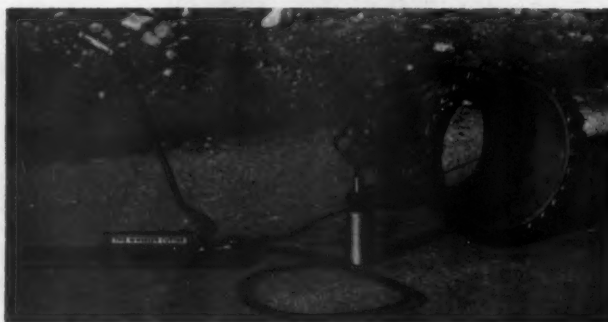
intervals moved the water along to ground-storage tanks, from which it was pumped to the several sets of Rainbird 30 sprinklers.

Penetrate 60 feet

Experience has proved that best penetration is obtained when water is applied over whatever growth of grass, weeds, or sagebrush is on the land. Therefore, the water subcontractor must get on the job well ahead of the grading contractor so that the water will penetrate to the desired depths in the desired quantities before the ground surface is stripped. If subsequent watering is required, it is much more difficult to prevent run-off and get thorough penetration.

With a limited time in which to apply the water, Industrial operated as many as 150 sprinklers most of the time, keeping them running day and night every day of the week. Men in Jeeps carefully watched the areas, moving the sprinklers from

WHEELER "SUPER" HYDRAULIC PIPE CUTTER



CUTS 10" THRU 20" CAST IRON WATER MAIN WITH A SNAP!

This unit is readily installed on the pipe by two men and the pipe is then quickly and easily cut by one man.

ALL YOU DO IS WRAP THE CHAIN AROUND THE PIPE, ENGAGE IT IN THE CUTTER'S JAWS, ADJUST OUT THE SLACK AND OPERATE THE PUMP.

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THE WHEELER MANUFACTURING CORP.

P.O. BOX 688

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A two-ton vibrating roller producing high density compaction equal to static rollers weighing 10 tons. Designed specifically for asphalt and soil compaction without surface corrugation. Adaptable as a static roller, too. Outstanding for high density compaction of large or small areas.



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CONTRACTORS AND ENGINEERS

place to place whenever runoff began. After time was allowed for the water to penetrate and cure out, the sprinklers were moved back again. This process was repeated until tests indicated that the water had penetrated the full 60-foot depth of the deepest soil.

In some cases, impervious soil strata prevent the water from penetrating to the required depth. In these cases, the only solution was to re-water after the grading contractor had removed the moist material and surfaced the impervious strata.

Although very little additional water is required in the grading, some will be pumped into the reservoirs for the contractors' use in finishing the grades this summer.

The grading contractors will pump



this water to tank trucks for use in dust control and to compensate for evaporation in the finishing stages of the work.

Personnel

The watering operation was supervised for Industrial Pipelines, Inc., by Eldon "Hoot" Gibson. Project superintendents for the grading contractors are Robert Sugar for Roth Construction Co. and John Kent for Wilbur Christensen.

These projects are under the supervision of resident engineer John Jobe, Jr., of the Buffalo division of the Wyoming State Highway Department. These projects fall within the Sheridan district, for which George R. Anderson is district engineer. W. G. Ainsley is state construction engineer, and J. R. Bromley is chief engineer of the Wyoming department.

THE END

District sales manager appointed by Browning

Browning Mfg. Co., San Antonio, Texas, producer of self-propelled rollers has named Ben Lingenfelter western district sales manager. His headquarters will be in Salt Lake City, Utah.

Lingenfelter has had many years experience in the compaction-equipment field.



Powerful Salem Trench Drill advances hole and casing simultaneously. Hole is completely supported. No need to disturb anything on the surface.



24-ID drills 6" to 24" diameter holes ... back reams to 36".

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New equipment—and new spe



Contractors and Engineers staff article

One of the most forward-looking steps taken to close the gap between availability of new equipment and its acceptance by state highway departments is the proposed creation of a joint ARBA-AASHO Committee on Equipment.

As first proposed, the committee would be empowered to rate the performance of road-building equipment, its efficiency, and the economy in its proposed use. This information would then be passed on to highway officials

Stephens-Adamson elects

■ The Stephens-Adamson Mfg. Co., Aurora, Ill., maker of material-handling conveyor systems, has elected several new officers.

L. S. Stevens, president of the company since 1934, is now chairman of the board. Donald L. Stephens succeeds his father as president. E. J. Renner, a vice president of the firm, was elected to the board of directors; and R. W. Barton, a board member, has been elected a vice president.

Elected to newly created vice presidencies were R. H. Humm, manager of Standard Products Division, and D. R. Dolan, plant manager. James W. Cadwell is now secretary.

Worthington makes personnel changes

■ William A. Finn is the new vice president, group executive, of Worthington Corp., Harrison, N. J. He was formerly general manager of the firm's Harrison Division. Successor to Finn as vice president and general manager of that division is A. Edwin Carter, now vice president, manufacturing.

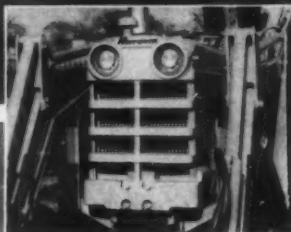
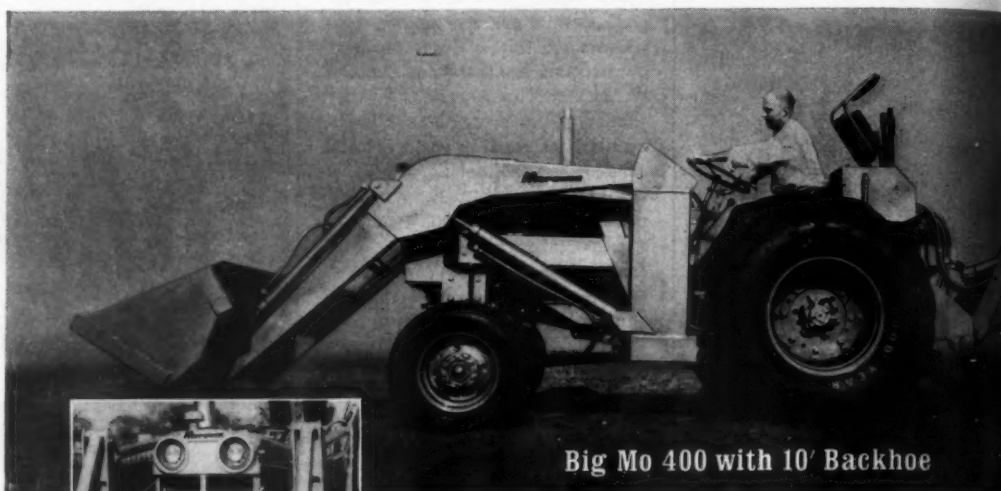
Worthington's Construction Equipment Division, Holyoke, Mass., has named four zone sales managers.

Frederick J. Reardon is the new eastern sales manager with headquarters at Harrison. He will supervise activities in the Boston, New York, Philadelphia, Washington, D. C., Buffalo, and Pittsburgh district offices.

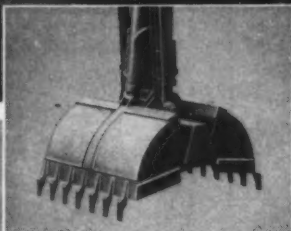
Leo V. Gilroy was appointed central sales manager with headquarters in Chicago. The central zone includes the Chicago, Cleveland, Detroit, Cincinnati, St. Louis, and Kansas City district-office areas.

Richard J. Spezzano has been named sales manager of the southern zone including the Atlanta, New Orleans, Houston, Dallas, and Tulsa areas. He will operate from headquarters in Atlanta.

The new western sales manager with headquarters in San Francisco is Charles W. Croney. He will be in charge of the El Paso, Los Angeles, San Francisco (including Hawaiian Islands), Denver (including Salt Lake City), and Seattle areas.



Big Mo 500's new, 400-lbs.-heavier front end... exclusive new 1/2 yd. loader!



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by AASHO, without the need for each machine rated to be privately demonstrated. In addition to making recommendations on new machinery, the committee would study the adoption of end-result specifications, where they seem desirable, and promote new and better methods for inspection and acceptance of work by highway departments. Finally, it would study amortization legislation aimed at helping contractors purchase new equipment that would prove economically desirable.

In essence, the committee would be working to free contractors from limitations imposed by many state specification requirements, make spex more flexible—particularly in the area of equipment selection, promote the use of end-result specifications, aid in

establishing more nearly uniform specifications, and operate as a group where equipment and methods can be discussed and recommendations made on them.

Creation of such a committee was shaped in a Symposium on Equipment at the ARBA convention in Atlantic City in March, where highway officials, contractors, and equipment manufacturers served as panelists on new developments in earthmoving, material processing, paving, and acceptance of new developments.

The views, comments, and predictions of the panelists who gave impetus to the creation of the Committee on Equipment are significant in that they collectively underscore the need for and the trend toward more workable spex.

Some of the most pertinent statements at the session came from highway officials and contractors, among them Ralph R. Bartelsmeyer, chief engineer of the Illinois Division of Highways, who singled out compaction for attention. According to him, specification requirements should permit full use and development of improved equipment, and if highway departments can agree on methods, equipment, and results for each condition of soil type and moisture content, a long step in the right direction would be taken. "Manufacturers," he said, "could reduce the number of models, contractors would be able to buy equipment that is widely accepted, and highway departments would be assured of quality." For Bartelsmeyer, economical handling of

earthwork for its most effective use must be considered in design, and contractors must be given maximum freedom to use efficient new equipment where quality is assured.

One kind of end-result spex

"In order to permit and encourage the improvement of equipment and methods," said Bartelsmeyer, "most of the states are now adopting the end-result approach and are permitting compaction by any method that produces satisfactory consolidation of the material." He clarified the term "end-result specification," which in Illinois, he said, does not consist of accepting or rejecting a product on the basis of tests made only upon completion. "In fairness to both the state and the contractor, certain requirements are established for kinds of materials to be used, and provisions are made for tests to be conducted as the work progresses. This provides better assurance of a satisfactory end-product and allows for corrections to be made, if required, to adapt to changing conditions during construction."

Returning to proper design, Bartelsmeyer declared that extreme care must be exercised "to assure that impractical methods are not specified or that unreasonable restrictions are not placed on the contractor. These," he said, "are the responsibilities of the highway department."

A paper read for E. S. Preston, director of highways of the Ohio Department of Highways, came out strongly for modernizing specifications. The paving equipment available today, he said, handles a job with more quality and more economy than ever before. "This is a tribute to the efforts of equipment manufacturers to continuously improve equipment," he pointed out, then added that manufacturers cannot do the whole job. "Contractors," said Preston, have to "update their complement of paving units as new developments demonstrate merit. As the same time, highway departments must accept these proven developments promptly to encourage both the equipment manufacturer and contractor."

Preston called for close study of standards that fix the maximum rate of paving, standards which he said "can remove the incentive for manufacturers of paving equipment to increase the productivity of their machines. Their market may be reduced because contractors will not buy new equipment as long as specifications limit their productivity to the capacity of the machines they own."

Preston also cited another bad effect of restrictive spex by mentioning a manufacturer who lost his market for an 8-wheel roller in one state because a requirement called for 9 wheels. "In order to compete in that state," said Preston, "the manufacturer would have had to design and produce another model. Furthermore, his contractor customers that had purchased the 8-wheel model would have had to purchase another roller in order to cross that state line to work on certain highway projects."

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(Continued from preceding page)

equipment requirements, Preston listed advantages to all—the manufacturers, who could economize by limiting the number of models they produce; the contractors, who would have equipment acceptable under many jurisdictions and could operate with fewer models; and operators, who could become more highly skilled on the fewer number of machines.

"If highway departments can state clearly and precisely what they want," said Preston, detailed equipment requirements could be minimized and the combined benefits from improved equipment and contractor ingenuity could be realized. "Better machines," Preston concluded, "will do a better job more efficiently and give us a bet-

ter finished product. We must open the door to them and encourage their development and use."

Encourage new developments

More realistic thinking by highway departments concerning specifications was also called for by John O. Morton, commissioner, New Hampshire State Highway Department, who felt that if improvements to machines are to be encouraged, there must be an atmosphere of willingness to use new developments of proven merit. "An important requirement in creating such an atmosphere," said Morton, "is flexibility in highway construction specifications."

In Morton's opinion, "New Hampshire and an increasing number of other states believe that such an atmosphere breeds economical construction, expeditious completion of the work, and a fair profit for the contractor." As far as quality is concerned, he said that "we have given the contractor a definite goal to achieve that he can understand and we can measure. In addition, we pre-qualify our contractors on the basis of their experience, past performance, financial condition, equipment, personnel, and other factors."

Morton made it clear that he did not advocate that highway construction standards be reduced to a series of end-result specifications, but that "modifications be used to allow the contractor freedom, and at the same time assure the highway department of high-quality work."

Morton illustrated his point by showing how acceptance of compact portable crushing and asphalt plants has allowed New Hampshire to make better use of its natural materials and to improve the quality and reduce the cost of pavements.

Morton summed up his views this way: "Equipment requirements in the states where he works become the

contractor's shopping list. He is not going to buy a new piece of equipment, even when he knows it will do a better job, if the specifications he works under prevent its use. Specifications, therefore, which are not conducive to the use of proven new equipment, deprive the contractor and the highway department from its benefits. In addition, the inertia in specifications discourages equipment manufacturers from improvement of their machines and the development of new ones. We must offer them this incentive if we are to hold the price line and continue to improve quality in highway construction."

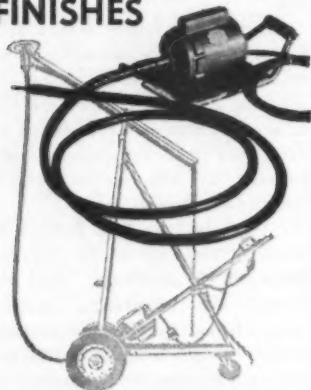
Contractors speak up

The contractors appearing on the panels were unanimous in their desire

to bring specifications up to date. Ralph E. Heffner, Jr., president, Heffner Construction Co., Celina, Ohio, did not champion end-result specifications, though he declared he would not be opposed to those that would "describe at least one acceptable method by which the job has been successfully performed. This method would not be binding," he said, but would serve as a guide to keep the contractor "in the ball park." He did draw a bead on specifications requiring certain equipment, particularly those dealing with compaction, and called this type of specification one that is "often obsolete by the time the specification comes off the press."

Some solid recommendations on paving widths and the mixing of concrete and of blacktop material were

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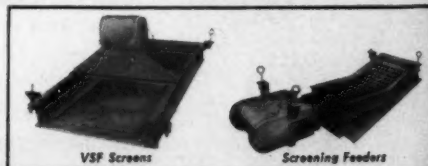
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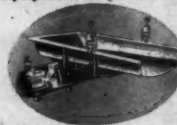
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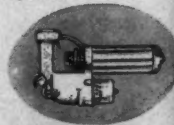
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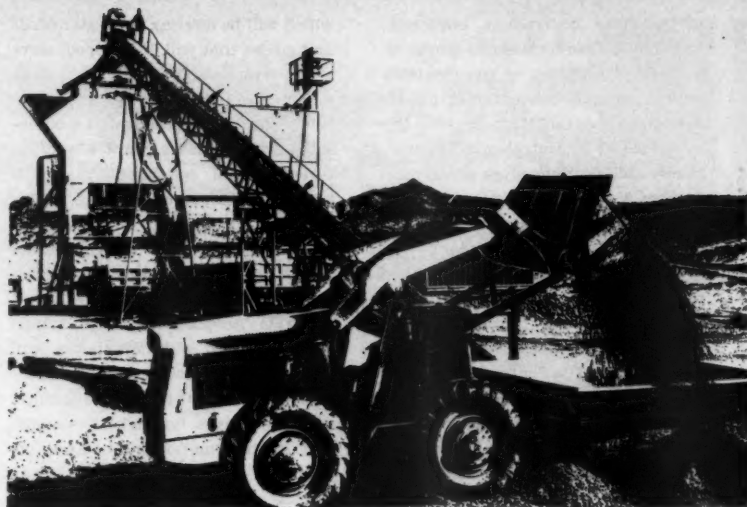
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made by Donald O. McKay, vice president of S. J. Groves & Sons Co., Camp Hill, Pa. He felt that roads paved full width have proven their serviceability and that "the contractor should have the option to pave in full or half width as he deems most efficient for his plant." In his opinion, too, a quality pavement concrete can be produced by conventional pavers or central-mix plants, and the available plant of contractors should affect the way a job is done. Going by results of tests, he felt that mixing time under either method should be about the same. Regarding hot-mix cycles, he said that "an inflexible maximum cycle greatly hampers production and does not add to the quality of the mixed product." While acknowledging that a national standard



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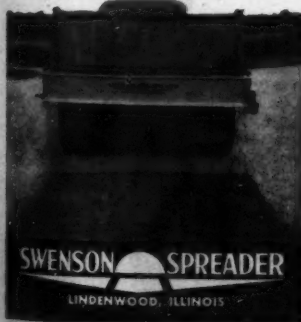
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MAY, 1961

cannot be adopted, he declared that "mixing cycles can certainly be modified downward in many cases, particularly where late-model plants are used. There is a considerable saving possible which ultimately comes back to the state," he pointed out.

Restrictive specs

R. W. Hyde, Jr., president of the Contractors Division of ARBA and of Hyde Construction Co., Jackson, Miss., hit out at the widespread effects of restrictive equipment specifications. Using a report compiled from a survey of 2,000 contractor-members of ARBA, he quoted that "contractors reported that current specifications required them to use methods or equipment, or both, which they would not otherwise have chosen. They reported they were being hampered by methods and equipment required for compaction and for bituminous and concrete paving. . ."

Hyde felt that the specifications under which contractors operate "must be receptive to the increased output, improved quality, or closer tolerances that the new equipment is

capable of providing. If construction specifications are kept current with the state of the equipment-manufacturing art," he said, "all bidders will be on an equal basis."

Hyde was one of those who pinpointed equipment depreciation allowance as a reason why firms were reluctant to buy new equipment. Only the original cost of the machine is allowed to be written off over a period of years, Hyde pointed out, and this is supposed to allow him to accumulate enough money to replace a rig when it is fully depreciated. Yet "the contractor finds a wide gap between depreciation of the original equipment and the value of replacement," he said, and "this is one of the major deterrents to more rapid equipment modernization on the part of highway contractors."

Need for clarification

The need for revamping state highway specifications also found champions among the manufacturers' representatives on the earthmoving, material-processing, and paving panels.

(Continued on next page)

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(Continued from preceding page)

Notable among them was Kenneth P. Kerr, vice president of sales and engineering for Butler Bin Co., Waukesha, Wis., who reviewed specs related to automatic batching equipment with "sophisticated" controls. The new approach to batching, he said, has speed, uniformity, and accuracy, and in many instances, automation affords saving in required labor. State highway departments, according to Kerr, "have been aware of the revolutionary equipment and methods now available, and a number of states are changing, or are considering changes, in their specifications to take full advantage of advances available."

Close cooperation will be required

of the state, contractors, engineers, and manufacturers when it comes to a study of revisions of specifications written around conventional batching equipment, said Kerr, for with the introduction of central-mix concrete, "these specifications often are in conflict or do not precisely apply. This will have to be cleared up to give clear sailing to the contractor."

Kerr brought up some unrealistic requirements in a case where specifications may call for an accuracy tolerance of 2 per cent. Kerr declared that "arguments can start as to whether this is 2 per cent overweight and 2 per cent underweight, or a total of 2 per cent—1 per cent underweight and 1 per cent overweight. Or does this mean 1 per cent over and under weight on filling and 1 per cent variation in discharge? Or is this 2 per cent on discharge?" In another example, Kerr mentioned one state that is currently specifying a scale accuracy of $\frac{1}{4}$ of 1 per cent but demanding a batching accuracy of $\frac{1}{10}$ of 1 per cent.

A number of states, said Kerr, call for "discharge gates to be interlocked so as to prevent closing until all material is out of the hopper." He remarked, "This is fine for equipment batching to dump trucks, but if truck mixers are being used, it is highly possible that uncontrolled discharge will result in the mixer or sub-chute choking up, and the better part of the load ending up on the ground. Either the specifications should provide alternates for this situation, or recognition should be given to the fact that interlocking provides protection so that subsequent batching cannot be accomplished until all of the material is out of the batcher and the scale returned to balance."

It is apparent, Kerr added, that some "extension and clarification of specifications is needed. This is being investigated by interested groups

which will be offering some standards and guides that will, it is hoped, serve as a reference and help to avoid some of the misunderstandings that certainly can be both costly and troublesome. The Concrete Plant Manufacturers Bureau, comprising the seven major manufacturers of concrete-plant equipment, have issued printed standards that have been reviewed and approved by the Board of Directors of the National Ready Mixed Concrete Association. These standards have had wide circulation and acceptance. This same bureau is currently working on proposed specifications for plants for highway paving, and this information will be available as early in 1962 as possible. A nationally accepted specification for batching plants for highway work is a goal worth all of our combined efforts."

Manufacturers view spec

Specifications regarding subgrades were taken up by R. P. Shea, engineering consultant to Preco, Inc., Los Angeles, who said that the trend in this area is toward tighter specifications and that this is "likely to continue and certainly will not be reversed." Shea declared it is up to industry to "give careful attention to the task of providing the contractor with the tools to meet this problem, and it is essential that the contractor continually reappraise his equipment, methods, and personnel if he is to remain competitive."

Another panel member calling for recognition of improved designs in standard specifications for asphaltic-concrete work was E. H. Holt, vice president, Barber-Greene Co., Aurora, Ill. If this is done, said Holt, it will "not only lead to higher-quality and lower-cost mixes for the future, but will provide additional incentives for the contractor and manufacturer alike to modernize for better roads."

Future trends were touched on by several members of the panel on paving. J. J. Marcello, Chain Belt Co., Milwaukee, looked for an increasing use of slip-form paving, which, he said, is gradually gaining acceptability with highway departments. Seventeen departments currently have used or will permit the use of a slip-form paver, said Marcello, but the greatest economy has yet to be realized with the method. This, he added, "can be accomplished only with continued use and familiarity with its capabilities. Improvements have been made constantly and will continue to be made. Within a few years, slip-form paving will become the conventional method for placing concrete pavement."

Marcello also expects a further improvement in types of joint filler and

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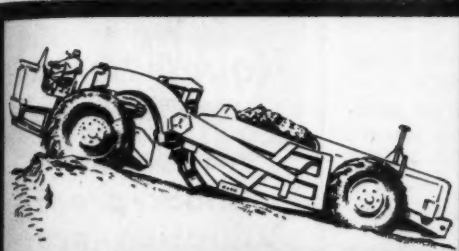
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methods of installation. "Some are of the opinion that the thinner the joint, the better. With the development of new materials, both plastic and aluminum, studies can be made on the possibility of their use. Another possibility which deserves consideration is the installation of transverse joints at a slight angle rather than perpendicular to the slab edges. Benefits to be studied are better load transfer, reduction of tire thumping, less of a tendency for the slab to curl." Improvements in the mechanical spray curing machine, said Marcella, "should be aimed at a mechanical agitator to prevent settlement of solids to the bottom of the barrel, and at improved controls to meet the higher production requirements of today's high-speed paving spread."

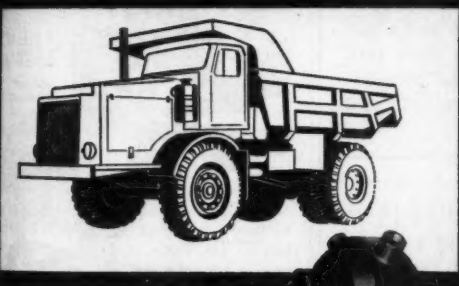


"Specifications must be receptive to the increased output, improved quality, or closer tolerances that the new equipment is capable of providing."

—R. W. Hyde, Jr., president of Hyde Construction Co., Jackson, Miss., and the Contractors Division of ARBA.



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MAY, 1961

Developments in concrete pavers, spreaders, and finishers were presented on this panel by J. R. Steelman, president of Koehring Co., Milwaukee. Another speaker on base-course work, hot-mix finishers of the pneumatic-mounted type, the spreading of liquid asphalt by bituminous distributors, and chip spreaders was Robert W. Thornburg, division manager of the Construction Equipment Division of Blaw-Knox Co., Mattoon, Ill. He gave assurance of more developments in this equipment in the future, saying that constant improvement is being made every year by the machinery manufacturers, under the guidance and suggestion of various state and federal engineers, as well as the contractor. "With the continuing cooperation which is in existence today," he said, "better machines for better roads at a fair price and a fair profit to the contractor will be continually developed."

H. T. Larmore, general products manager, Construction Machinery Division, Allis-Chalmers Mfg. Co.,
(Continued on next page)

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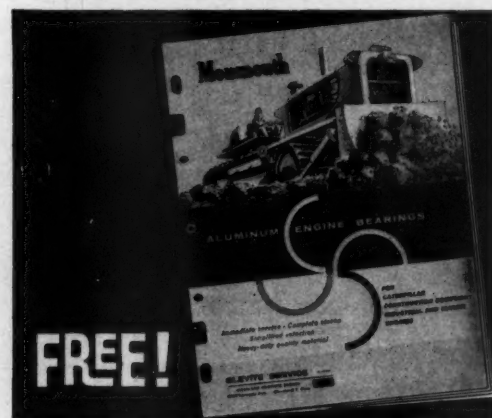
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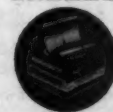
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Pipe is stockpiled at the Central Pipe Co.'s yard in Salt Lake City, Utah, by this 15-ton-capacity Unit Model 1014 truck crane preparatory to being shipped out to the site of a new pipeline project. The rig is owned by H. L. Young & Sons, Inc., of Salt Lake City.



A workman inspects finished welds on piping for the new 325,000-kilowatt-hour power station of the Arkansas Power & Light Co., south of Helena, Ark. Airco low-hydrogen 327 electrodes were used on this operation by The Grafe-Weeks Corp., subcontractor to Ebasco Services, Inc.

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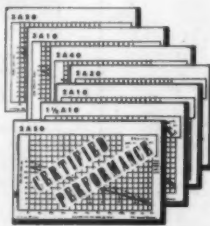
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(Continued from preceding page)

Milwaukee, promised "even greater changes coming in the future to answer new demands from the earthmoving and road-building industry. As these come," he said, "the crawler-tractor industry stands prepared to furnish machinery designed for the job to be done."

R. J. Warren, product specialist with the Construction Machinery Division of Clark Equipment Co., Benton Harbor, Mich., similarly expected "continuing progress in the broad application of rubber-tire speed and agility" to earthmoving work of the future. Increased capacity of power shovels and draglines in earthmoving was pointed up by E. O. Martinson, vice president, research and development, for Koehring Co., Milwaukee, another panel member.

While noting that prices of some equipment have risen two and a half times in recent years, a paper read for W. E. Hendricks of LeTourneau-Westinghouse Co., Peoria, Ill., said



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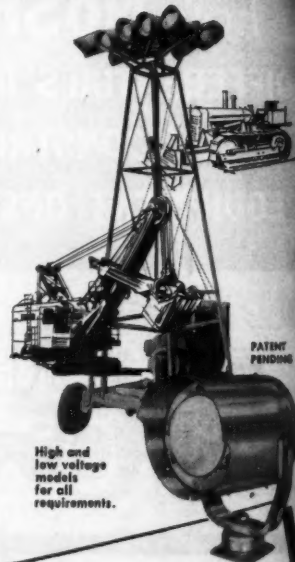
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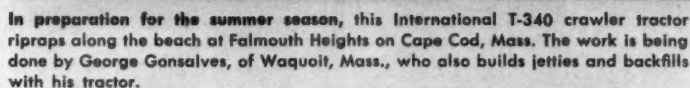
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CONTRACTORS AND ENGINEERS



The elongation of band bolts under strain is measured by employees of U. S. Steel's American Bridge Division on this 15-ton cable sample for the Narrows Bridge over New York Harbor. American Steel and Wire Division is furnishing 30,000 tons of wire for four 7,000-foot-long suspension cables.



In preparation for the summer season, this International T-340 crawler tractor rips along the beach at Falmouth Heights on Cape Cod, Mass. The work is being done by George Gonsalves, of Waquoit, Mass., who also builds jetties and backfills with his tractor.

"Air King" Quick-Acting, Universal Type Coupling. Built on plain, rugged lines to assure long trouble-free service under all conditions. Locking heads identical for all sizes of hose or threaded ends within the "Air King" size range. To connect, press together and apply quarter-turn. Reverse to disconnect. Equipped with auxiliary locking device for added safety. Regularly furnished in bronze or rust-proofed malleable iron, but also available in special metals.



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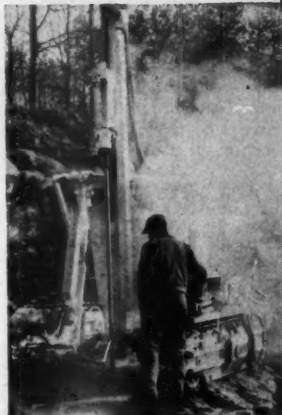
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the rigs are still a good buy in view of today's greater production capacity. He also held out hope for equipment with even larger payload capacities. "Higher-strength steel and better structural design," he said, "will bring weight reductions to machinery of the foreseeable future. These further improvements in equipment capabilities are essentially predictable. They would lead us to believe that dirt-moving costs can be held to a nominal increase, although it seems unlikely that either equipment or methods can prevent a rising cost in the future as they had in the past. However, nothing is impossible. Perhaps around the corner is another innovation to earthmoving equipment. The possibility is there, the probability is not yet apparent."

G. E. Danby, manager, sales-development department of the Euclid Division of General Motors Corp., Detroit, briefly reviewed refinements made in the design and use of dozers and rippers; and C. T. Thompson.



Brunner & Lay

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(Continued from preceding page)

chief engineer of the rock-drill department of Joy Mfg. Co., Claremont, N. H., outlined problems and tools in rock-drilling work.

The future in hauling

Some interesting views of future developments in off-highway and over-the-road hauling were presented in a paper read for K. L. Kitts, of the off-highway sales division of Mack Trucks, Inc., Plainfield, N. J. He felt that there will be "many further improvements in the diesel engine before the gas-turbine or jet engines are made sufficiently economical and suitable for earthmoving machinery." He also looked toward more use of tractor-trailer combinations of some sort, depending on state law, to handle highway hauls most economically and within legal highway limits.

Future developments of aggregate-producing equipment will probably depend more on refinement of known equipment than on radical breakthroughs, according to Hans I. Hansen, consulting engineer from Iowa Mfg. Co., Cedar Rapids, Iowa. Hansen did make mention of a Russian mill reported to produce cinder sand by taking 8-inch rock and reducing it to minus 1/2-inch in a single pass. But real developments in this country, said Hansen, "will come in the portable field, with an increase of over-all capacity of the individual unit of a unitized arrangement."

Hansen was also one of the manufacturer representatives concerned with specifications. "There are two problems facing road builders today," he declared. "One is the changing specification requirements with a higher percentage of fines as, for instance, in base material produced from rock, and the percentages of crushed particles in crushed gravel. A study of existing gradation specification in the light of today's knowledge is a must," he stated. The second problem mentioned by Hansen was weight limitations on over-the-road hauling of equipment, particularly crusher plants. According to Hansen, if we are to take "full advantage of the equipment of today and that of the future, ways must be found to resolve this problem within

each state, and jointly with states."

In speaking of the expansion of the loader industry, Kenneth B. Larkin, eastern regional sales manager, The Frank G. Hough Co., Libertyville, Ill., gave credit to customer demands for better performance. Larkin noted that the trend is toward even larger machines of this type. "Where does the front-end loader industry go from here?" he asked in conclusion. "That's up to the American road builder."

He might well have said the same thing for the entire road-equipment industry.

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It is the original 180 cycle motor-in-head vibrator.

Has greater effectiveness than any competitive vibrator. Places stiff concrete up to 20% faster.

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Oliver Corp.	13
Overman Mfg. Co., I. J.	116
Owen Bucket Co.	75
Parsons Company	116
Parsons Engineering Co., Inc.	98
Phoenix Products Co.	150
Pitt City Steel Corp.	17
Power-Pack Conveyor Co.	121
Primo-Mover Co.	141, 143

Rammet Fastening System	56
Richmond Screw Anchor Co., Inc.	138
Rodgers Hydraulic, Inc.	132
Rogers Trailers Inc.	155
Rolcor Div., Reese Mfg. Co.	142
Rome Flow Co.	45

Salem Tool Co.	143
Saugen Derrick Co.	34
Silent Hoist & Crane Co.	103
Smith & Co., Inc., Gordon	98
Sonoco Products Co.	140
Sta-Crete, Inc.	147
Standard Oil Company of California	57
Standard Steel Works, Inc.	17
Stephens-Adamson Mfg. Co.	100
Stow Mfg. Co.	146
Superior Concrete Accessories, Inc.	25
Swenson Spreader & Mfg. Co.	147
Symons Clamp & Mfg. Co.	45
Syntro Co.	146
Syrr Steel Co.	64

Tarrant Mfg. Co.	149
Texaco Inc.	9
Thow Shovel Co.	119
Travelift Div. of Drott Mfg. Corp.	19
Transport Trailers, Inc.	75

Unit Crane & Shovel Corp.	72
U. S. Steel Subsidiaries	69
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Universal Atlas Cement Co.	
(U. S. Steel Sub.)	69
Universal Form Clamp Co.	118

Van Brush Mfg. Co.	143
Vibro-Plus Products, Inc.	122
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Wheel Truening Tool Co.	112
Wheeler Mfg. Corp.	142
White Mfg. Co.	102
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Willey & Sons, Inc., John	100

Williams Mfg. Co., Hugh B.	108
Winshire Metal	151
Winslow Gov't Standard Scale Works, Inc.	131
Wisconsin Motor Corp.	74
Wisconsin Trailer Co., Inc.	114
Wix Corp.	109
Worthington Corp.	73
Wylie Mfg. Co., Inc.	99
Yale & Towne Mfg. Co.	81

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Manufacturer Memos



Glen Herz, vice president of engineering, the Hyster Co.

Hyster Co., Portland, Ore., has elected Glenn Herz and James L. Woodley as vice presidents of engineering and manufacturing, respectively.

Herz has been chief engineer for the company since 1958 and has been

active in the development of many of Hyster's new products. For the past year, Woodley has been manager of manufacturing for the company, which makes industrial trucks, tractor equipment, and heavy-duty trailers.

James L. Woodley, vice president of manufacturing, the Hyster Co.



Donald M. McDonnell, senior vice president of Blyth & Co., has been elected to the board of directors of Chicago Pneumatic Tool Co., New York, N. Y. He is also a director of the Magnavox Co., General Dynamics Corp., The Halliburton Co., and Blyth & Co.

Carl E. Boat has been appointed sales manager of Vermeer Mfg. Co., Pella, Iowa, manufacturer of irrigation, ditch-digging, and stump-removal equipment. He has been with the sales department since 1950.

Boat succeeds Bill Willinger. Willinger has established a new firm, Willinger Bros. Equipment Co., West Salem, Wis., which sells Vermeer industrial equipment in Minnesota and Wisconsin.

Robert C. Tyo has been elected to the newly created position of vice president, DeWalt operations, by The Black & Decker Mfg. Co., Towson, Md., manufacturer of portable electric tools. Tyo was recently elected president of DeWalt, Inc., a B&D subsidiary in Lancaster, Pa. He previously served as president, general manager, and a director of the Porter-Cable Machine Co.

Frank P. D'Anci has been appointed president of Clamshell Bucket Sales Corp., Long Island City, N. Y. Clamshell is a subsidiary of The Oliver Bucket Co., Cleveland, Ohio.

D'Anci, formerly director of distributor sales, succeeds F. T. Nolan, who recently retired.

Frank J. Szabo, recently named controller of the parent company, has been named secretary-treasurer of the subsidiary.

John H. Mangle is the new vice president of operations of Oliver Corp., Chicago, Ill. For the past six months he has been an assistant executive vice president of The White Motor Co., of which Oliver is a subsidiary.

Koehring Co., Milwaukee, Wis., has appointed Harry S. Jeske president and general manager of Koehring's Kwik-Mix Division, Port Washington, Wis.

Formerly manager of the Koehring Southern plant at Chattanooga, Tenn., he has been with the company for 20 years.

Stanley H. Frederick has been named chief engineer of Marlow Pumps, division of Bell & Gossett Co., Midland Park, N. J. He will direct research and development of new products, as well as existing ones, and will be in complete charge of Marlow's engineering facilities.

For the past year, Frederick has been assistant chief engineer in charge of Marlow research.

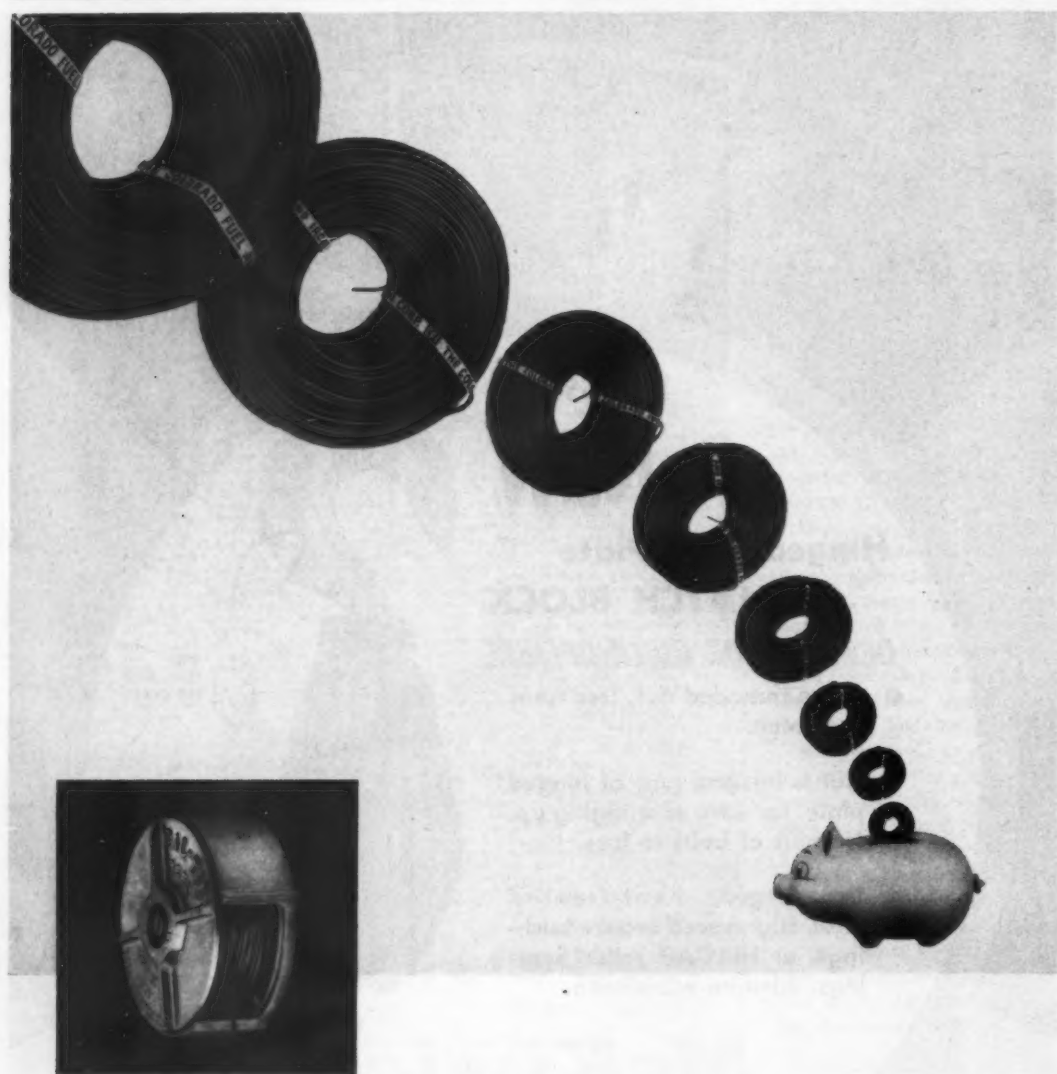
C. A. Burt has been appointed district salesman for the division, covering Maryland, Delaware, and parts of Pennsylvania.

Duff-Norton Co., Pittsburgh, Pa., producer of industrial jacks and hoists, has appointed C. Richard Schmitt a sales representative in New York State with headquarters in Syracuse.

Schmitt has had previous sales experience with Emerson Electric Mfg. Co., and Black & Decker.

J. Stewart Cruickshank, assistant manager of International Harvester Co.'s Milwaukee Works, has been promoted to manager of that facility. He succeeds W. C. Brice, new assistant manager of the company's manufacturing research organization in Chicago.

V. A. Guebard, Jr., is the new general superintendent of the plant. He was formerly foundry general superintendent.



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You put money in the bank when you equip rebar tying crews with Cal-Tie Wire in the handy belt-borne dispenser.

This cost-cutting combination allows your workers to cut the right amount of wire for every tie and to use the entire coil without waste. Because Cal-Tie Reels are always within easy reach yet

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